

EMD's 2,400-hp Supercharged Locomotive Page 13

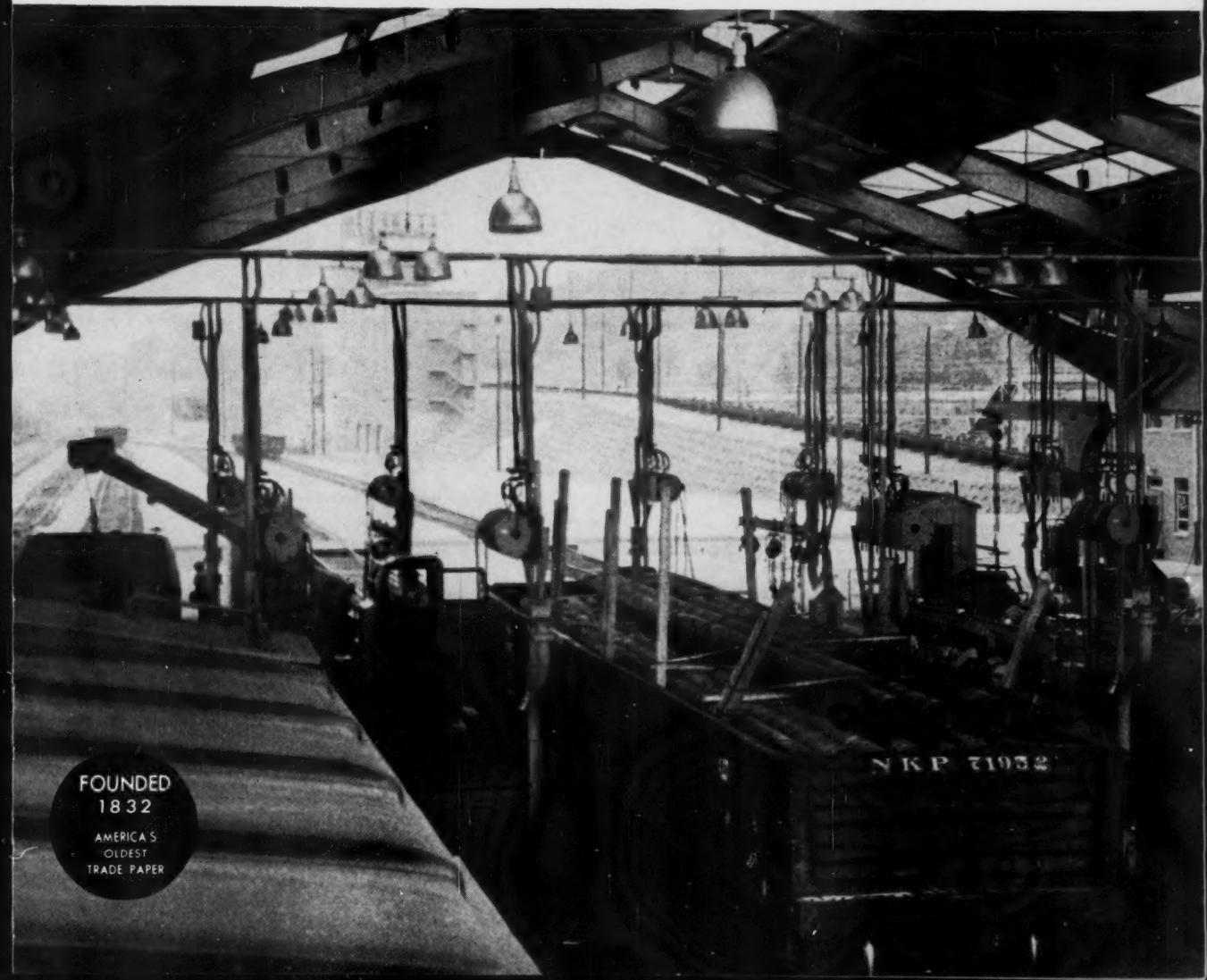
RAILWAY

LOCOMOTIVES AND CARS

A SIMMONS-BOARDMAN TIME-SAVER PUBLICATION

JANUARY 1959

P&LE Saves with 'Spot' Car Repairs Page 18



FOUNDED
1832

AMERICA'S
OLDEST
TRADE PAPER

NKP 71932



It's "in the bag" for easy application ... *Texaco Crater*

Texaco Crater is now available in 1-lb. polyethylene bags—48 bags to the case—clean, convenient, economical. This is the same reliable product that has long been giving traction motor gears outstanding protection in all types of Diesel gear cases. But now—make-up servicing is so fast and easy—just drop in bag and all.

Time and again, comparative road tests have proven that Texaco Crater gives more miles per pound. Now, with in-the-bag application, over-all lubricating costs can

be lowered, too—because in over-the-pit servicing, it's easy to control quantity, eliminate all waste, sharply reduce application time.

For full information, call the nearest Texaco Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis, or Atlanta. Or write:

★ ★ ★
The Texas Company, *Railway Sales Division*, 135 East 42nd Street, New York 17, N.Y.



TEXACO Railroad Lubricants
AND SYSTEMATIC ENGINEERING SERVICE





here's why **NATIONAL** Rewind Kits help you do a better job ...more easily, more quickly and more economically

1. Coils are of the highest quality . . . and each one fits exactly as it should.
2. Everything you need to do the job is conveniently packed right in one box.
3. All winding supplies reflect the latest in materials development and application.
4. Comprehensive, easy-to-follow placement and connection diagrams clearly explain the best winding procedure and technique.

For complete details on kits to meet *your* motor maintenance requirements, give your nearby National field engineer a call or drop us a line.

NATIONAL ELECTRIC COIL COMPANY

COLUMBUS 16, OHIO, U. S. A.



ELECTRICAL ENGINEERS: MAKERS OF ELECTRICAL COILS AND INSULATION—
REDESIGNING AND REPAIRING OF ROTATING ELECTRICAL MACHINES



HERE

AND ABROAD

MINER

RAILWAY APPLIANCES

are in more extensive use on every type of rolling stock, proving their satisfactory performance and unquestioned economy. These products justly merit their universal position in the railway field.

W. H. MINER, INC. CHICAGO



LOCO-MOTIVES AND CARS

The Oldest Trade Paper
In the United States

JANUARY 1959 • VOL. 133 NO. 1

Editorial and Executive Offices:
30 Church Street, New York 7

C. L. Combes
Editor, New York

F. N. Houser
Managing Editor, New York

Norman E. Gillespie
Western Editor, Chicago

A. G. Oehler
Consulting Editor, New York

Lillian D. Milner
Editorial Assistant, New York

Robert G. Lewis
Publisher, New York

Duane C. Salisbury
Director of Sales, New York

BRANCH OFFICES: 79 West Monroe St., Chicago 3; 1081 National Press Bldg., Washington 4, D. C.; 1501 Euclid Ave., Cleveland 15; Suite 203, Carlton House, Pittsburgh 19; 214 Terminal Sales Bldg., Portland 5, Ore.; 244 California St., San Francisco 4; 1151 West Sixth St., Los Angeles 17; 3908 Lemmon Ave., Dallas 19, Tex.

FOREIGN REPRESENTATIVES: Sibley Field Publishing Company, Ltd., 8/9 Clerkenwell Green, London E. C. 1, England; Georg J. Linder, Continental European Representative, (16) Frankfurt a. Main, Wittelsbacher Allee 60, West Germany.

Railway Locomotives and Cars is a member of the Audit Bureau of Circulation (A.B.C.) and is indexed by the Engineering Index Service. Printed in U.S.A.

Published monthly by the Simmons-Boardman Publishing Corporation at 3rd & Hunting Park Ave., Philadelphia 40. James G. Lyne, Chairman of the Board; Arthur J. McGinnis, President and Treasurer; Fred A. Clark, Vice-Pres. and Sec.; George Dusenbury, Vice-Pres. and Editorial and Promotional Director; M. J. Fife, Director of Production.

Circulation Department: R. C. Van Ness, Director of Circulation, 30 Church St., New York 7. Second-class postage paid at the Post Office at Philadelphia, Pa. Subscription price to railroad employees only in U.S. possessions and Canada, \$1 one year, \$3 two years, payable in advance. Subscription price to railroad employees elsewhere, \$8 per year. Single copies, 75¢. Address all subscriptions and correspondence concerning them to: Subscription Department, Railway Locomotives and Cars, Emmett St., Bristol, Conn. Changes of address should reach us three weeks in advance of the next issue date. Send old address with the new, enclosing, if possible, your address label. The Post Office will not forward copies unless you provide extra postage. Duplicate copies cannot be sent.

POSTMASTER-SEND FORM 3579 TO: EMMETT ST., BRISTOL, CONN.

REPORT FOR JANUARY

RR's Urged To Reduce Bad-Order Ratio

The National Industrial Traffic League, at its recent convention in New York, adopted a number of proposals which reflect shipper concern for the establishment of preservation of what the League regards as sound transportation principles. As regards car supply, the League's Car Service Committee reported "strong feeling that any upsurge in business will be accompanied by a car shortage of some magnitude." Accordingly, the League adopted the committee's recommendation, that: "The Association of American Railroads be advised of League concern for present poor condition of equipment as evidenced by bad-order statistics." Included in the same vote was a request that "AAR members take steps to anticipate business conditions" in order to insure adequate car supply.

The League likewise supported the same committee's recommendation "for more realistic treatment of depreciation, to permit and encourage acquisition and maintenance of adequate rolling stock."

New Materials and Methods Are ASME Topics

Additive car oils, draft-gear developments, and a carbon-grade steel with better cold-weather characteristics for car castings were the subjects of technical sessions held by the Railroad Divisions, American Society of Mechanical Engineers, in December. Radioactive methods for determining diesel engine wear and methods for



W. M. Keller



F. H. Einwaechter

evaluating filter efficiency were also discussed at the New York meetings.

B. C. Gunnell, new president of the Railroad Division, announced that an ASME Railroad Division Conference will be held in Chicago on April 8 and 9, 1959. During the annual Railroad Division luncheon, F. H. Einwaechter, chief engineer motive power and equipment, Baltimore & Ohio, and W. M. Keller, vice-president (research), AAR, were made Fellows of the ASME.

Automation of train operation, utilizing new techniques, such as punched-tape programming, was one of the engineering challenges made by G. B. Warren, ASME president, at the luncheon. He called attention to the electric utility industry and said that the unmanned and completely automatic central power station is no longer a theoretical concept.

Utilization of all the latest technological developments, Mr. Warren said, would convince government and the public that the railroads are worthy of the subsidy which the principal speaker, New Haven president George B. Alpert, had just said

(Continued on page 8)

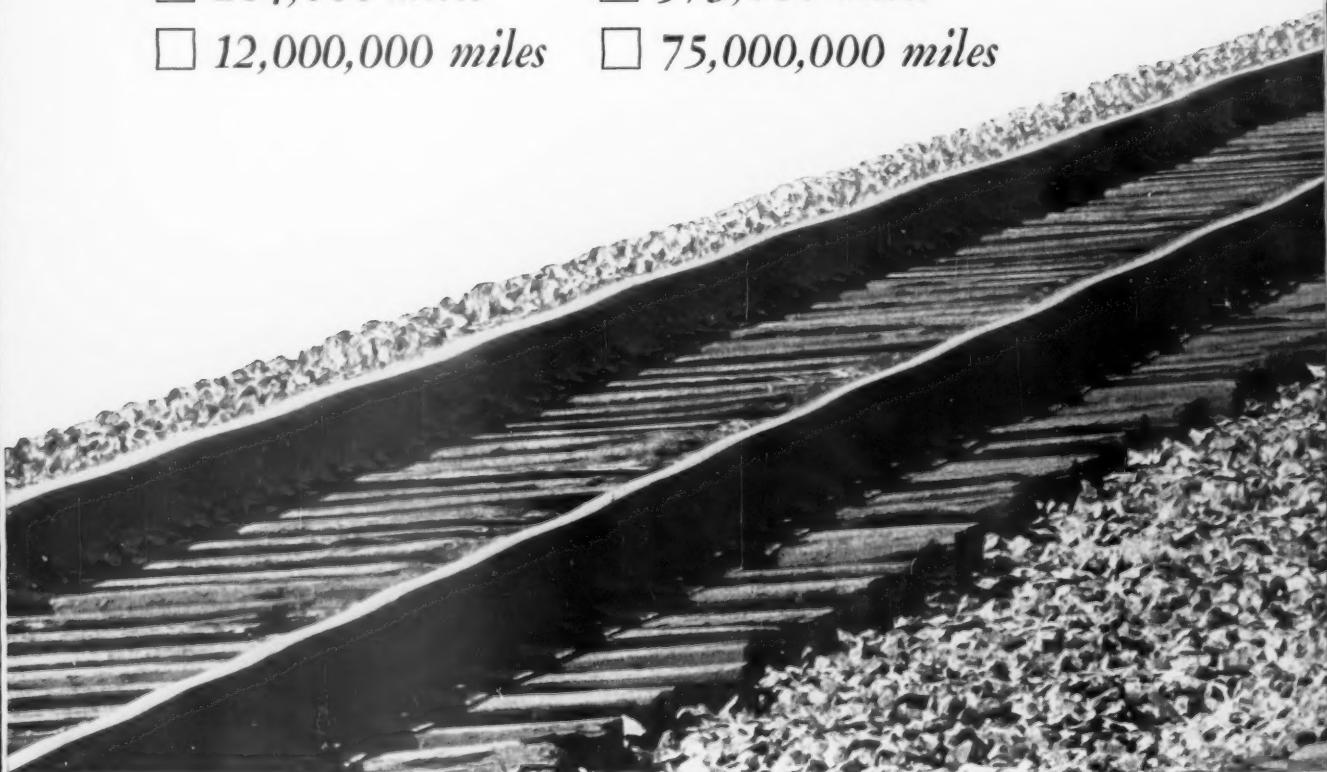
TIME SAVING IDEAS FOR JANUARY

P&LE 'Spot' Facility Speeds Car Repairs	13
General Motors Introduces New Locomotives	18
Rock Island Cars Get 'Supercushion' Underframes	22
Disappearing Act (Mechanical Refrigeration Series)	27
C&NW Orders 'Push-Pull' Commuter Cars	30
Great Northern Cools Diesel with Boiling Water	32
Crew Stalls To Keep Locomotive from Stalling	36
— — —	
What's New in Equipment	38
Personal Mention	46

How many car-miles does "Roller per overheated bearing?

CHECK ONE:

- 204,000 miles 973,000 miles
- 12,000,000 miles 75,000,000 miles



75 MILLION CAR-MILES per overheated bearing. That's the average mileage based on reports from railroads using "Roller Freight"—cars on Timken® tapered roller bearings. And one railroad has gone over 300,000,000 car-miles with only one overheated bearing. Friction bearings average only 204 thousand car-miles between hot box setouts alone. The mileage per overheated bearing is probably less than 55,000.

Timken roller bearings *roll* the load. They eliminate the metal-to-metal sliding that causes friction bearings to get hot. That's the big reason why 71 railroads and private car owners already have over 26,000 "Roller Freight" cars in service or on order. And 56 of these freight car owners are teaming

up by putting their "Roller Freight" cars in interchange—a total of over $\frac{1}{3}$ of all "Roller Freight" cars.

These railroads are sharing the benefits of "Roller Freight" with other lines to speed the day when all freight is "Roller Freight". The day when the railroads will save an estimated \$288,000,000 a year or about \$144 per car in maintenance and operating costs—by licking the hot box problem, by cutting terminal bearing inspection time 90%, by cutting lubricant cost as much as 95%.

We'll be glad to show you how much Timken bearings will save on your new equipment. How planned conversion can put your present cars on

"Freight" average

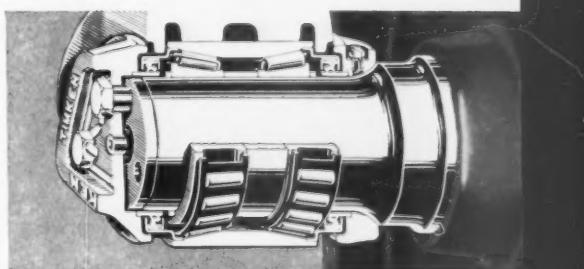


Timken roller bearings—let you spread the cost over a period of years. Get Timken bearings for your freight cars. More roller bearing cars *roll* on

Timken bearings than any other make. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED
ROLLER
BEARINGS



The next great step in railroading is "Roller Freight" in interchange

Report

(Continued from page 5)

they must have. Mr. Warren told the group that the Engineers Joint Council, a coordinating body for the national engineering societies, stands ready to make engineering recommendations to assist in the development of a national transportation policy and possibly a national urban transit policy as well.

A foundry material popular in Europe—low-carbon intermediate-manganese steel—has been shown to be a solution to the cold-weather problem of "brittle fracture." A recent study of railroad component failures performed by the Manufacturing Research Laboratory of American Steel Foundries, "indicated that truck members can fail by the brittle failure phenomenon and offered evidence to suggest a modified steel composition which would reduce the likelihood of such failure." The steel is generally equivalent to AAR grade B except that the manganese content is increased from a maximum of 0.80 per cent to a maximum of 1.20 per cent. During discussion, W. M. Keller warned that too much manganese might lead to fatigue problems. The new material is being included in ASTM specifications.

Additive Car Oils

Worn-in journal bearings perform satisfactorily with an adequate supply of straight mineral oil, work by the Research and Development Department of the Texas Company has shown. Actual operating experience shows these ideal operating conditions do not always exist. Oil starvation, abnormal unit loads, or low-oil viscosity frequently set up "boundary" lubrication conditions which result in hot boxes. Under these conditions, "straight mineral oils have been demonstrated both in the laboratory and in actual service to be inadequate," according to R. F. Meeker and D. C. McGahey of Texaco's Technical Services Division.

"While it is recognized that many bearing failures are due to causes beyond the realm of prevention by lubricant quality, it is entirely reasonable to conclude that heavy-duty oils . . . can and do prevent an appreciable percentage of marginal conditions from progressing to expensive hot boxes . . . Seasonal grades of car oil are recommended for free oiling to compensate for increased oil viscosity and reduced wicking rates at low winter temperatures."

M. A. Pinney, engineer of tests, Pennsylvania, recommended that additive type oils be used for saturating new packing and pads to protect new journal bearings during break-in. He agreed with the recommendations for changes in viscosity or oil applied to journal boxes in different seasons, but urged that such "free oiling" begin well in advance of the season for which the particular oil grade is designed.

Draft-gear developments were traced in a paper by the late N. T. Olsen, president of the Peerless Equipment Company. His conclusions were that protection for freight cars during the years ahead will be achieved as follows:

Orders and Inquiries for New Equipment

Placed Since the Closing of the December Issue

Diesel-Electric Locomotive Orders

Road and builder	No. of units	Horse-power	Service	Other details
ATCHISON, TOPEKA & SANTA FE:	30	2,400	...	SD-24 turbosuper-charged units. Deliveries of 42 units scheduled for second quarter 1958. DL600B units.
Electro-Motive	12	2,400	...	
BATH & HAMMONDSPORT: Plymouth Locomotive Works	1	200	Switch.	50,000 lb. For February delivery.
Electro-Motive	16	2,400	Road switch.	
CHICAGO, BURLINGTON & QUINCY:	12	1,750	Road switch.	SD-24. Delivery of 37 units expected by end of May.
Electro-Motive	9	1,200	Switch.	
NEW YORK, CHICAGO & ST. LOUIS:	20	1,750	Road switch.	Deliveries of 35 units scheduled for first quarter 1959.
Alco Products	15	1,800	Road switch.	

Freight Car Orders

Road and builder	No. of cars	Type of car	Cap., tons	Length, ft-in.	Other detail
ATLANTIC COAST LINE: Company shops	200	Open-top wood-chip hoppers	..	50-0	5,400 cu ft capacity. Being built at rate of 20 to 25 cars per month.
ATCHISON, TOPEKA & SANTA FE: ACF Industries	50	Covered hopper	70	50-6	To be equipped with DF devices, shock-control underframes, roller bearings, and nailable steel flooring. 200 to be insulated. Road will also order 100 70-ton covered hopper cars.
Company shops	500	Box	..	..
BUREAU OF MINES: American Car & Fdry.	20	Tank	..	..	To transport government produced helium gas. Cost, \$1,959,000.
CHESAPEAKE & OHIO: Pullman-Standard	50	Box	50	50-0	Cost, \$584,750, including \$2,795 per car for Quick Loader lining.
CHICAGO & EASTERN ILLINOIS: American Car & Fdry.	750	Hopper	70	..	Approx. cost, \$6,750,000. For delivery first quarter 1959.
CHICAGO & NORTH WESTERN: American Car & Fdry.	50	Covered hopper	70	..	Delivery scheduled for early 1959.
CHICAGO, BURLINGTON & QUINCY: Company shops	600	Box	50	40-6	To have nailable steel floors and 14-ft combination sliding and plug doors. Insulated DF-equipped, for Burlington Refrigerated Express.
	100	Box	70	..	With removable sectional roofs.
	500	Hopper	70	..	..
	100	Bulkhead gondolas	70	..	..
CLINCHFIELD: General American	50	Bulkhead flats	50	..	Radio equipped. "Airsides."
	30	Cabooses	..	..
	20	Hoppers	..	..
	100	Covered hoppers	..	..
GREAT NORTHERN: Company shops	100	Open-top hopper	70	..	Approx. cost, \$910,000. For March delivery.
ILLINOIS CENTRAL: Company shops	500	Box	..	..	Heavy repairs will also be made to 1,000 cars.
	1,900	Box	50	..	In addition to cars to be built in company shops, 50 70-ton covered hoppers will be purchased from an outside car builder.
	500	Hopper	70	..	..
	250	Automobile	50	..	..
	100	Bulkhead flat	50	..	..
	35	Flat	70	53-6	..
	15	Flat	70	60-6	..
LOUISVILLE & NASHVILLE: Pullman-Standard	3,000	Hopper	70	..	Cost, \$28,000,000. Deliveries to begin mid-January and completed within six months.
MISSOURI-KANSAS-TEXAS: Pullman-Standard	10	Box	50	40-0	DF type. Early 1959 delivery.
MINNEAPOLIS, ST. PAUL & SAULT STE MARIE: ACF Industries	8	Covered hopper	70	..	Each of 10 cars 2,03 cu ft cap. Delivered.
Pullman-Standard	5	Covered hopper	70	..	..

(Continued on page 10)

from Callaway Mills— **WIKIT** journal lubricators



PAT. PENDING

...with 4
exclusive
features!

• **Specially Constructed Center Wick**—One-third of the pile fabric is in the center wick. If there is any oil in the box, WIKIT absorbs it!

• **"Loop Tite" Jacket**—Special construction, woven by a patented process, interlocks loop pile in the weave. Gives greater tensile strength . . . protection against glazing.

• **ABSORBenized®**—WIKIT jackets are specially treated — like famous Callaway bath towels — to assure greatest absorbency, faster wicking.

• **Specially Shaped** — WIKIT lubricates the entire journal . . . is shaped to oil end collar and fillet

without exposing main body of lubricator to damage.

WIKIT absorbs and retains 5 pints of oil or more, depending upon size...after saturation and draining 3 hours. Provides continuous lubrication under toughest usage and all weather conditions. Nylon tape secures non-ferrous pull handles to lubricator ends . . . has tensile strength in excess of 500 pounds. Cores are quality neoprene foam . . . resistant to oil, heat, and compression set . . . no metallic parts except pull handles. WIKIT is made for all journal sizes . . . is realistically priced. See your nearest Sales Representative!



CALLAWAY MILLS, INC. • 295 Fifth Avenue, New York 16, N. Y.

Representatives: New York • Philadelphia • Cleveland • Chicago • St. Paul • San Francisco • San Antonio • Louisville • Montreal

Freight Car Orders—(Continued from page 8)

Road and builder	No. of cars	Type of car	Cap., tons	Length ft-in.	Other detail
NEW YORK CENTRAL: Strick Trailers	100	Flat	...	...	Special double-unit type. Cost, approx. \$2,000,000. (See also Notes and Inquiries)
NORTHERN PACIFIC: Company shops	400	Box	...	40-0	
	100	Box	...	50-0	Insulated, with damage prevention loading devices.
PENNSYLVANIA: Company shops	6	Flat	140	...	
	2	Flat	200	...	28 cars in service.
	20	Flat	45	...	
PITTSBURGH & LAKES ERIE: Strick Trailers	25	Flat	...	...	Double-unit type. (See Notes and Inquiries)

Passenger Car Orders

Road and builder	No. of cars	Type of car	Other detail
CHICAGO & NORTH WESTERN: Pullman-Standard	36	Gallery	Planned to be of "puh-pull" design and to incorporate operating cabs. Cost, \$5,600,000.
NEW YORK TRANSIT AUTHORITY: American Car & Fdry.	200	Subway	For BMT. Purchase subject to approval by Board of Estimate. (IRT cars listed in table on pg. 8 Dec. issue to have molded Fiberglas seats and to cost \$11,726,000.)
SPOKANE, PORTLAND & SEATTLE: St. Louis Car	1	RPO baggage	
UNION PACIFIC: St. Louis Car	5	Coaches	Est. cost, over \$700,000.

Notes and Inquiries

FREIGHT CARS:

Minneapolis & St. Louis plans to equip 15 flat cars with bulkheads at its Marshalltown shops in 1959. New York Central has ordered from Strick Trailers of Philadelphia, a division of Fruehauf Trailer Company, 300 additional Flexi-Vans (50 fully mechanical refrigerator vans, 45 open-top vans for crane loading, 30 double-size door vans, and 175 regular 36-ft vans), and 150 highway wheel assemblies. The Flexi-Vans and wheel assemblies will cost approximately \$3,000,000.

Northern Pacific plans to purchase 50 mechanical refrigerator cars.

Pittsburgh & Lake Erie has ordered from Strick Trailers 100 Flexi-Vans and 50 highway wheel assemblies.

ASME Topics

(Continued from page 8)

- "We will continue the use of standard 24½-in. pocket gears for years to come, obtaining protection up to 4 mph.
- "For higher pay loads we will use the 36-in. gear, obtaining protection up to 8 mph.
- "For expensive high-premium lading, the sliding or cushioned underframe will be used, obtaining protection up to 12 mph.

"When one gives careful study to the present-day status," Mr. Olsen continued, in his paper "apparently the supplier should hang his head in shame and give credit where credit is due, and that is to the railroads where some of them have taken the matter in their own hands and endeavored to develop cushioning devices of more capacity." These arrangements include the Hydra-Cushion (SP) and Shock-Control (AT&SF) devices.

J. N. Moseley, research and test engineer, Norfolk & Western, said that open-top cars will continue to get the 24½-in. gears and that the newer standard gears have greater capacity (up to 45,000 ft-lb) and could make possible safe switching speeds up to 5.5 mph. He went on to say that greater travel might be achieved in the 24½-in. pocket. D. Campbell, Cardwell-Westinghouse, stated that the 24½-in. gear accounts for 4.5 per cent of the cost of a standard box car and that the 36-in. gear would increase this proportion to only 6 per cent of the first cost. He concluded that this was an in-

vestment which would be returned within two years.

The Southern Pacific reported on the techniques now being used to analyze diesel-engine wear. To replace the expensive and time-consuming method of wear testing in which measured components are placed in a diesel engine and operated in actual service conditions which frequently cannot be controlled, the SP has now turned to the use of radioactive piston-ring testing. The advantages of this method with a stationary locomotive are the speed with which one variable can be compared with another, the reliability of data because variables can be isolated, and the short duration of tests which makes possible multiple runs to assure the accuracy of results. The disadvantages are absence of data on possible fatigue failures and on the effects of lubricating-oil aging which can only be determined with long-term tests. The SP is using this method to determine the effects of its dual-fuel operation on its diesel locomotives. It was revealed that the Denver & Rio Grande Western is doing similar work and that the two railroads are sharing the results of their radioactive-wear investigations. M. A. Pinney said that on the Pennsylvania "in service" radioactive testing enabled his organization to evaluate six engine air filters in six weeks, work which would otherwise have taken two to three years and would have required six locomotives.

In discussing evaluation of filters, G. H. Newcomer, AAR director of mechanical research, said that the AAR Laboratory is working on this problem and has devel-

oped a "bubble" test which has mainly been used on fuel filters to date. The bubble test determines the average pore size in a filter medium. With a pore size of 0.00001 in. rated as 100, it has been found that cotton filters rate at 700 to 1,000 and that the paper or disc filters rate at 130 to 250.

Vote on Revised Lubricator Specification

Specifications for journal lubricating devices, including requirements for conditional and full AAR approval, were contained in a special letter ballot issued to member roads by the AAR Mechanical Division on December 8. The amount of oil which should be retained within the lubricator for an adequate rate of delivery to the journal has been omitted. These requirements are under investigation by the AAR Research Department. If the letter ballot is approved, specifications will not become retroactive and lubricating devices now in service will be permitted to continue in operation during their normal service life.

ICC Extends Dates for Ex Parte 174 Requirements

Extensions of effective dates for compliance with a series of provisions of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam have been ordered by the ICC. The order was dated November 26, 1958, and followed a petition for extension filed by the AAR and opposed by union organizations.

Compliance with the following Sections has been extended from January 1, 1959, to January 1, 1960: Rule 201(d) requiring that alarm and indication of slipping wheels on all units show in controlling unit cab; 204(c) requiring emergency brake valves accessible to fireman in cab and at doors of cab-type units; 222(c) requiring safety hangers to hold truck components in event of spring or spring hanger failure; 226(a) calling for secure wheel mounting and for wheel surfaces to be in such condition that cracks and defects can be detected; 229(b) requiring shatter-proof glass in all cab windows; 247(a) requiring for safe location and guarding of all jumper cables between units; and 262(a) and 321(e) requiring that controls for defective diesel engine or steam generator, shut down on unit in service, be tagged until repaired.

Compliance with three other sections was extended for a two-year period with the provision that half of each railroad's units be brought into compliance during the first year. Extended to January 1, 1961 from January 1, 1959, were Rules 201(c) requiring that control of speed and braking on all coupled units must be possible from controlling unit cab; 259 specifying that exhaust must not enter cabs; and 327(b) requiring that steam generators must be equipped for remote, electric ignition.

(Continued on page 38)



Western Maryland Adds New Hopper Cars

Five hundred new triple-hopper cars have been added to the Western Maryland fleet and are now in regular service. They have already proved their value to WM's progressive management, and to its shippers as well.

Built by Bethlehem, these husky cars are welded and riveted, and have a nominal load capacity of 70 tons. Where contact with the lading is involved, plates up to and including $\frac{3}{8}$ in. are copper-bearing steel. Combination rubber and friction draft gear is used. Running gear includes multiple-wear wrought-steel wheels and roller-bearing trucks, and some of the cars are equipped with disc brakes.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Other details of the cars are as follows:

Cubic capacity, level full.....	2700 cu ft
With 10-in. average heap.....	3030 cu ft
Length inside.....	40 ft 7 $\frac{3}{4}$ in.
Width inside.....	9 ft 7 $\frac{3}{4}$ in.
Height, rail to top of side.....	11 ft
Weight, empty.....	52,500 lb

Bethlehem is well equipped to build cars on short notice. Our fully integrated shops can handle either standard or special designs at competitive prices. Call us for quotations when you are planning new purchases.

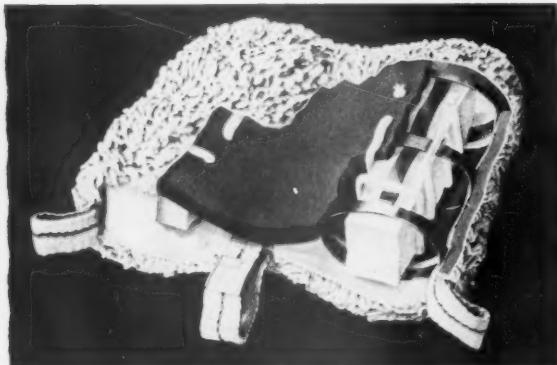
BETHLEHEM STEEL



NOW MAGNUS OFFERS THE PRACTICAL SOLUTION to the freight car HOT BOX PROBLEM



*Magnus Lubricator Pads and R-S Journal Stops give two-way protection against all major causes of road setouts due to bearings—provide the bearing performance railroads **WANT**, at a cost they can **AFFORD TO PAY—RIGHT NOW!***

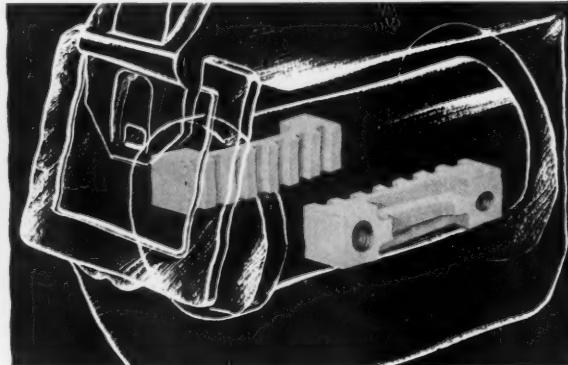


MAGNUS LUBRICATOR PADS

wick more oil, hold more oil, provide uninterrupted journal lubrication

Use Magnus Lubricator Pads to deliver the maximum amount of oil to the journal from an abundant oil supply. There's 3-way wicking—circumferential, internal and center-feed—and each pad holds 2.5 times its own weight in oil—better than 5.9 pints for the 6" x 11" size.

Rugged one-piece twin-lobe construction assures long life. Thoroughly tested internal springs provide maximum and constant resilience—pads just can't lose contact with journal during their useful life. The cover is heavy pre-shrunk duck, tufted with quality cotton yarn and backed by high-capillarity felt. In all, it's a lubricator pad designed by bearing experts to give you the performance you want and need.



MAGNUS R-S JOURNAL STOPS

stabilize the whole bearing assembly—double bearing life, cut hot boxes 90%

With R-S Journal Stops you keep the bearing in proper position at all times—restrict fore-and-aft movement of the axle to 3/32" in either direction. That prevents dust guard damage, lets oil seals work. You increase miles per hot box ten times, miles per cut journal fifteen times. You reduce wheel flange wear, cut truck maintenance costs all along the line.

Initial cost is low—less than 2% of new car cost—and you get that back in less than 3 years. That's why R-S Journal Stops are your best bet for better bearing performance.

For complete information on R-S Journal Stops and Magnus Lubricator Pads write to Magnus Metal Corporation, 111 Broadway, New York 6, or 80 E. Jackson Blvd., Chicago 4.

MAGNUS



SOLID BEARINGS
R-S JOURNAL STOPS
LUBRICATOR PADS



MAGNUS METAL CORPORATION Subsidiary of **NATIONAL LEAD COMPANY**



Repair shelter and building are located adjacent to the hump at Gateway Yard.

On the Pittsburgh & Lake Erie . . .

'Spot' Facility Speeds Car Repairs

THE GATEWAY YARD of the Pittsburgh & Lake Erie at Youngstown, Ohio, was opened last year and cost over \$7,000,000. Over \$500,000 of this was expended in the construction of a completely new facility for making light repairs to freight cars and for equipping this repair installation. Just as Gateway Yard has made possible the consolidation of several smaller classification and storage yards in the Youngstown area, the car repair installation has made possible the consolidation of four separate old style rip tracks.

The P & LE also handles all repairs for its parent New York Central, with which it connects at this point. The Gateway repair operation was based on methods and equipment first installed by the NYC at its Frontier Yard in Buffalo, N. Y. (RL&C, September 1957, p. 50).

The entire operation is developed around two concepts which are becoming increasingly popular in light car repair field. First, all work is brought to a special area where men, tools and repair materials are concentrated. Second, all tools and facilities in this work area are located so that workmen have no reason to move from their work stations. The entire operation is centered around a 105 x 150 ft, open-sided repair shelter.

Beneath and around the repair shelter, the entire area except between the rails is floored with seven inches of reinforced concrete. This

makes possible the unrestricted use of materials-handling trucks. Plastic skylights in the corrugated aluminum roof provide good natural illumination during daylight hours. Mercury vapor luminaires suspended from the roof of the shed provide a lighting intensity of 30 footcandles at the floor level. Special portable floodlights which can be placed on the floor provide illumination for work under fish-body gondolas and other cars with low side sills.

Under the shelter are four tracks spaced on 20-ft centers. Three of these run through and the fourth is a storage track used for material and scrap cars. The two tracks at the west side of this structure are the production or "fast" tracks on which



Trackmobile is used for car moving through the new repair facility. Paved crossings are provided at both ends of the shelter to enable the Trackmobile to move to other tracks.

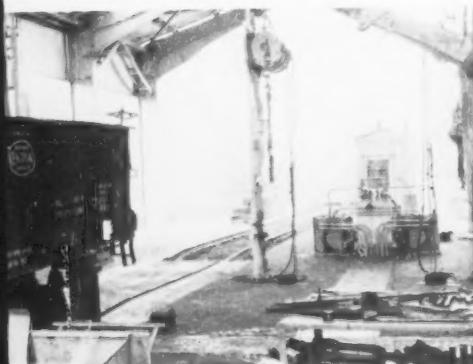


Jib cranes are used for disassembly of trucks. Small car parts are kept in adjacent racks.

most repairs are made. These repairs include journal repacking, replacement of couplers, brake cleaning, repair to trainlines, and adjustment of loads. The other through track is

used for heavier repairs to cars.

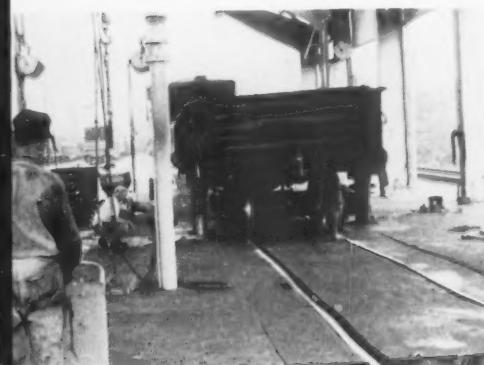
Some of the very lightest car repairs are made in the receiving yard following preliminary inspection. Other cars are bad ordered to the



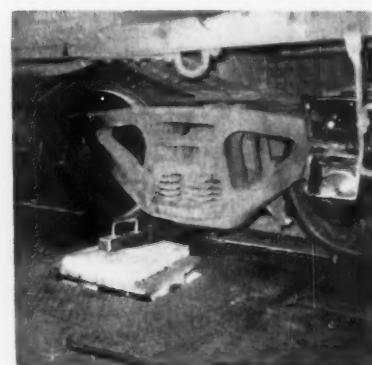
Control station and hydraulic equipment for jacks are between two "fast" tracks.



Hydraulic jack lift makes it possible to move truck back under center sill if necessary.



Operator has view of jacking operation.



Bar lifts side frame for wedge inspection.

repair installation. Two car inspectors, working from depressed inspection booths, examine cars for defects as they are shoved over the hump. A second floor on one inspection booth building permits overhead inspection of cars. Bad order cars are reported to the hump conductor and are diverted to a special track. From this, they are moved periodically to one of the production repair tracks. One of these tracks holds 14 cars, one 12 and the other 10. Similar storage capacity is provided on the outbound side of the repair facility.

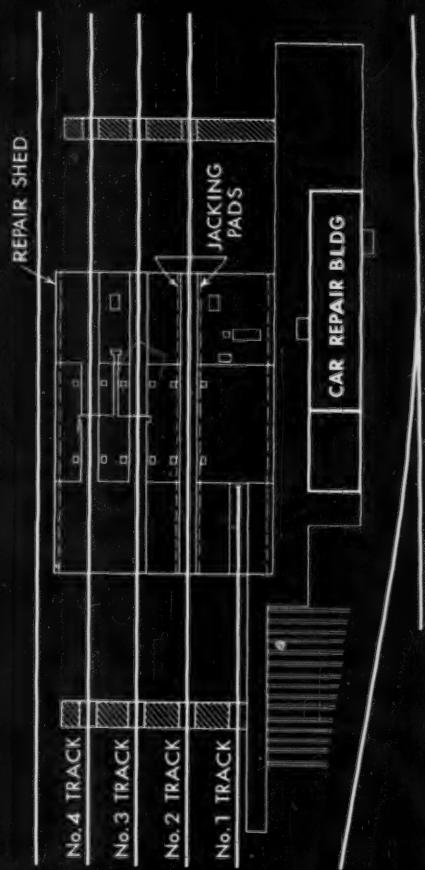
For moving cars which are being repaired, the P&LE car department uses a Model 3TM Trackmobile. Paved crossovers are provided approximately 100 ft from each end of the repair shelter so that the Trackmobile can be maneuvered.

The track on which the heavier car repairs are made has reinforced jacking pads on each side through the entire length of the repair shelter. The two fast tracks have a hydraulic jacking system built by Railway Maintenance Corporation. All three tracks have jib cranes fitted with electric hoists and used for truck disassembly. On the mast of each crane and on the stanchion in which the boom rests while in use are mounted a series of automatic hose reels, special electric welding receptacles and 110-volt outlets for electric hand tools.

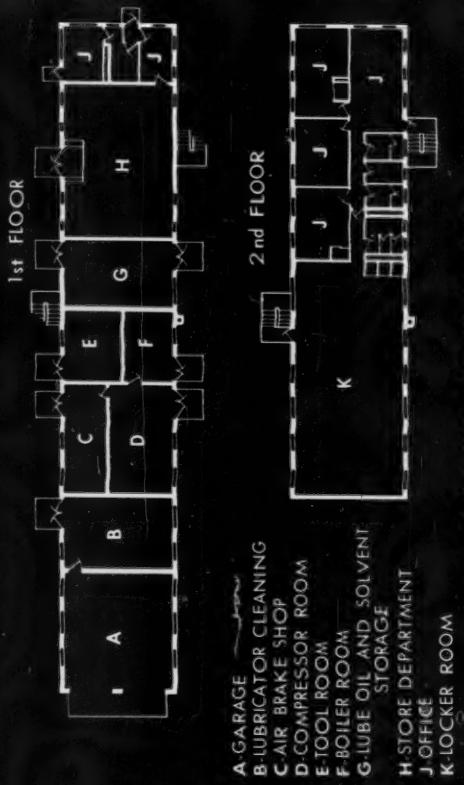
Through the hoses are supplied car oil, solvent, compressed air, na-

(Continued on Page 16)

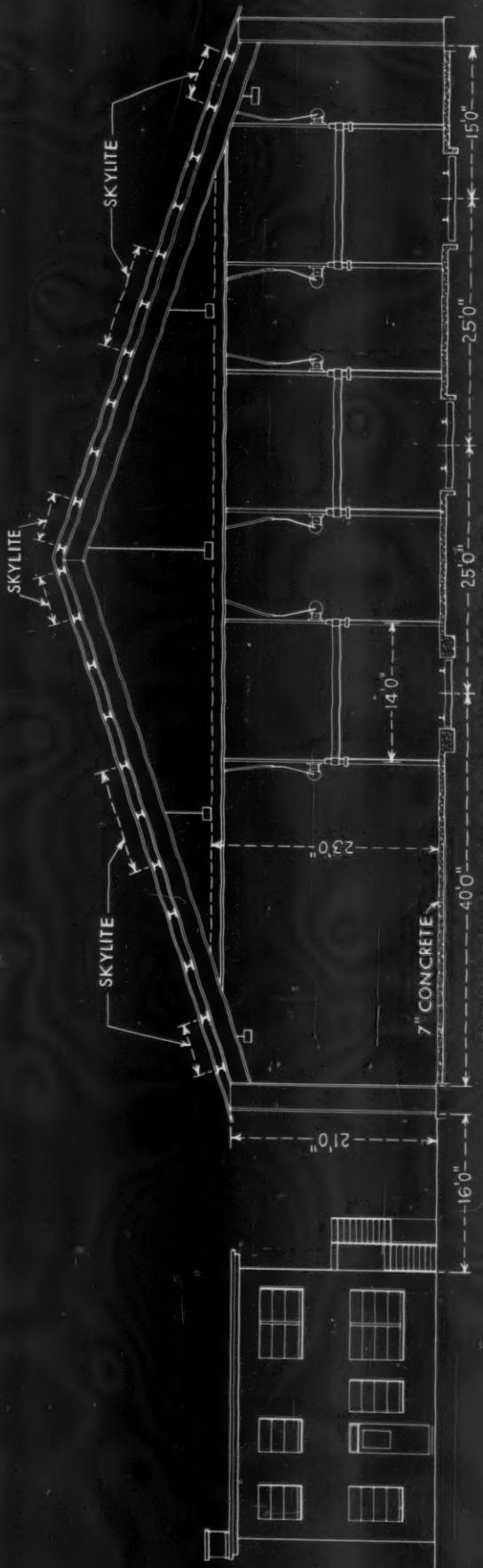
P&LE GATEWAY YARD CAR REPAIR FACILITIES

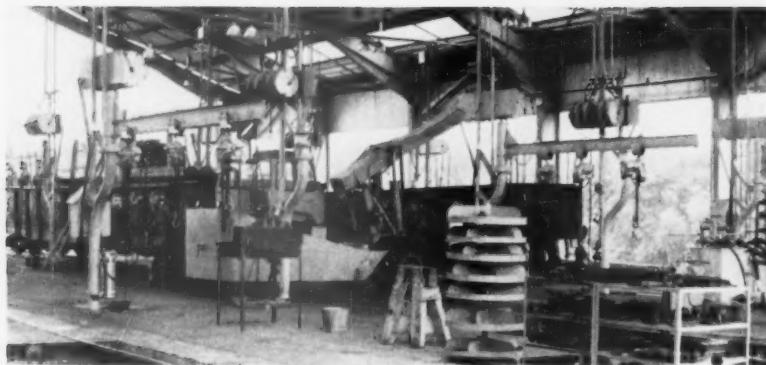


PLAN OF CAR REPAIR SHED

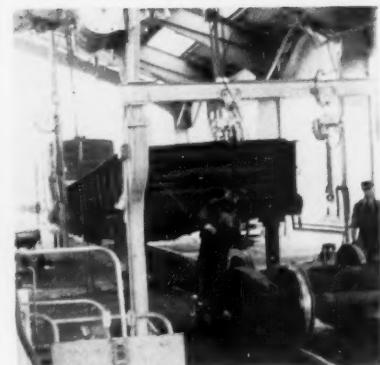


ENLARGED VIEW OF CAR REPAIR BUILDING

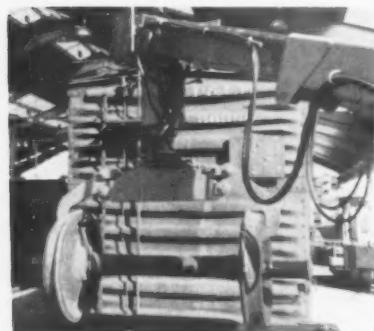




Telescoping-boom crane truck is used for adjusting loads and some straightening operations as well as to move materials and unload the wheel cars which come from McKees Rocks shop.



Solvent, car oil, cutting gas and compressed air are supplied through retractable hose reels.



Hydraulic wheel grab on crane truck makes a one-man operation of wheel handling.

Equipment at Gateway Yard Car Shop

1—4,000-lb fork lift truck	Allis-Chalmers Mfg. Co.
1—10,000-lb hydraulic, telescoping boom, crane truck	Grove Mfg. Co.
1—Model 3TM Trackmobile	Whiting Corp.
4—37-ton hydraulic jacks	Railway Maintenance Corp.
6—Jib cranes each with three 1-ton electric hoists	Nichols Engineering Co.
24—Double-hose, Weldreel hose reels	United Specialties, Inc.
24—Single-hose, Weldreel hose reels	United Specialties, Inc.
1—200-lb Beaudry electric hammer	Barbour Stockwell Co.
1—400-amp. electric welding machine	Lincoln Electric Co.
1— $\frac{3}{8}$ -in. drill press	Buffalo Forge Co.
1—Pipe and bolt threader	Oster Mfg. Company
3—Impact wrenches	Ingersoll Rand Company
2—Lubricator washing machines	Kelvinator Div., American Motors Sales Corp.
1—Gas forge	Shop made
1—Goldola end gate straightening press	Shop made
1—Car axle journal cleaning machine	Shop made

(Continued from Page 14)

tural gas, and oxygen. The car oil is supplied from a heated tank in the shop building and circulates through a piping loop to maintain a uniform temperature. The solvent is pumped from the car repair building and is delivered from a twin hose along with compressed air. Another twin hose is used to deliver natural gas and oxygen for cutting and heating. The oxygen is supplied from a bottle cascade under the repair shelter and the natural gas is delivered through a gas pump which steps up the local utility's transmission pressure.

Car Repair Building

The brick-faced, fire-proof, car repair building located adjacent to the repair shed has an office, locker rooms and washrooms, along with stores facilities. A series of special workrooms are provided on the first floor along with a garage for materials-handling and highway equipment used at this installation. The building is heated with hot

water supplied by two oil-fired steam generators. The shop is equipped with a small drill press and a pipe and bolt threader. The lubrication room is fitted with two domestic washing machines and a soaking tank—all for the reclamation of lubricator pads. All areas of this building and the car repair shelter are connected with an inter-com system.

The P&LE will soon use a new method for recording AAR billing information. Each repair track is equipped with a special microphone connected to a tape recorder in the office. As each repair operation is completed, the car repairman will report verbally the car number, what has been done, and what materials have been used. Clerks in the office will then complete the standard AAR billing card using the information from this tape record.

Work Loads

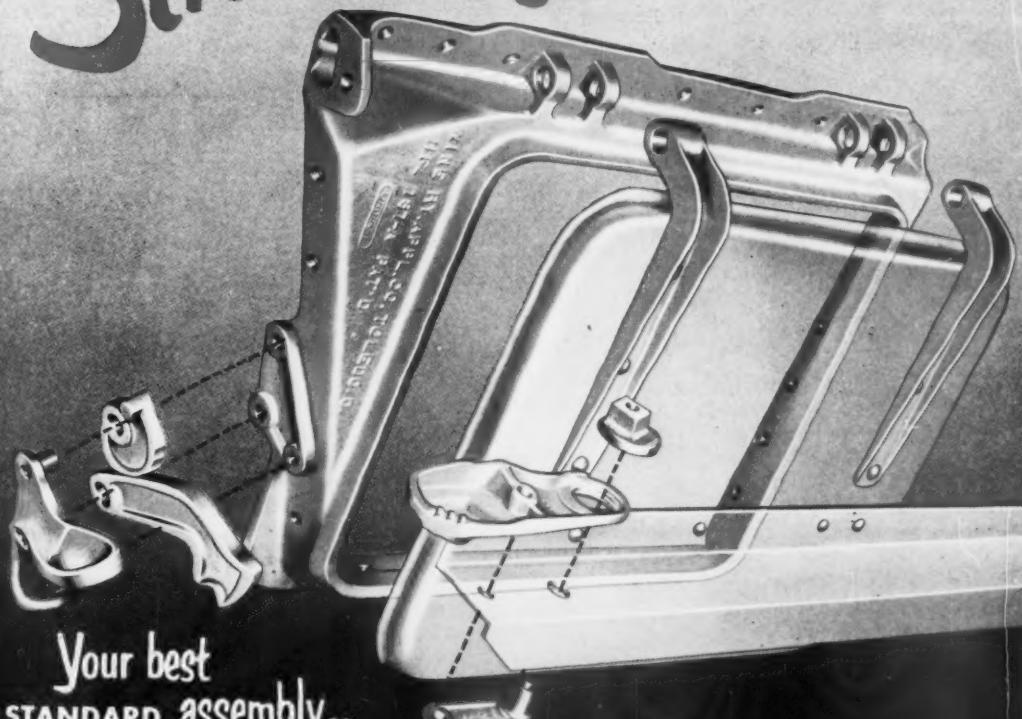
The capacity of this new repair installation is approximately 100 cars per day. This was about the maximum number ever turned out by the

four separate installations even when Youngstown's many steel mills were operating full blast. With the old set-up operating 8 hours per day and five days per week, the minimum detention for any car was 24 hours if it was bad ordered. The new shop is presently operated 16 hr per day, seven days a week, and is switched several times daily thereby materially reducing the detention time of cars so that frequently they are in the repair facility as little as 5 or 6 hr. A six-man force on each track handles the routine repair operations. Two car men are assigned to each of the fast tracks and make all of the repairs. One helper operates the Trackmobile, and the second helper operates the other materials-handling equipment. The day shift has a blacksmith for five days of each week. Work on the heavy repair track is done by the wreck train crew.

With the reduction in car delays, greater customer satisfaction, and more efficient methods for accomplishing the actual car repairs, this facility is already showing an excellent return.

CORRELATED UNITS MAKE HOPPERS

Structurally Sound..



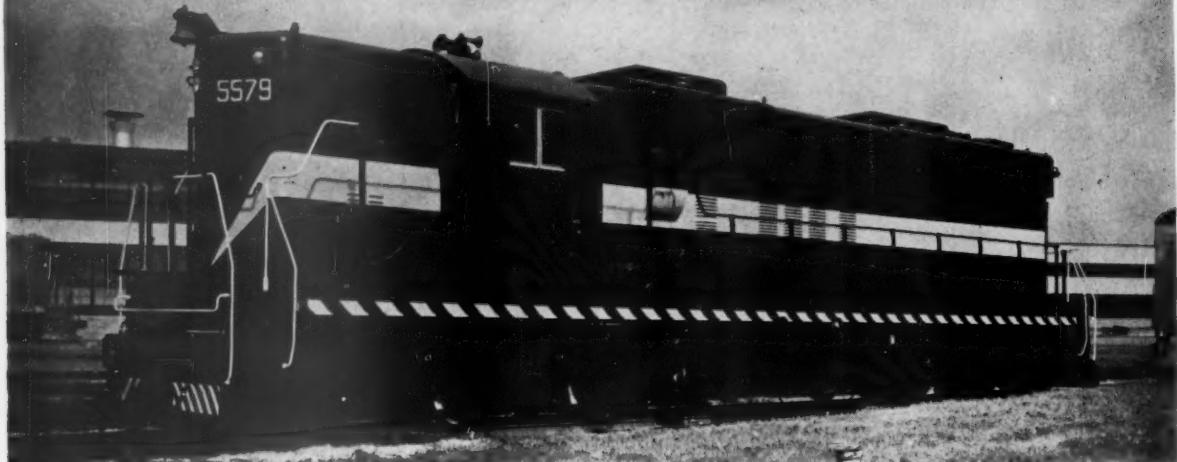
Your best
STANDARD assembly..



All cast steel!

**Hopper Frames,
Adjustable Locks
and Hinges**

THE WINE RAILWAY APPLIANCE CO., TOLEDO 9, OHIO



Supercharged 2,400-hp diesel has produced the high-power, single-engine General Motors road switcher, the new SD-24.

EMD Introduces New Locomotives

Supercharged 567-D diesel is used in 2,400-hp road switcher; 46 of these SD-24 units have been ordered

TWO NEW TYPES of General Motors locomotives, a domestic 2,400-hp heavy duty freight unit and an 800-hp export unit, will be in production at Electro-Motive Division during the second quarter of 1959. The SD-24, powered by the new turbocharged 567-D engine, was developed to haul present heavy tonnage trains faster, with fewer locomotives, and with less expense and greater return on investment. A prototype has been under test for several months on the Burlington and the Duluth, Missabe & Iron Range. Results show the locomotive can

handle heavy tonnage on the level approximately 16 per cent faster and up a 1 per cent grade 25 per cent faster than existing road locomotives designed for a wider range of service. Present orders for this SD-24 include 30 units for the Santa Fe, and 16 for the Burlington.

The export model GA-8 combines light weight, low cost and the ability to handle freight and passenger trains, and switching assignments. The locomotive, equipped with many standard EMD components, is designed to meet the market requirements of small railroads overseas.

Some 50,000 steam engines are presently being used in non-manufacturing countries in Asia, Africa and South America. In these areas, the track and bridge structures are light, station and tunnel clearances are restricted and modern shop facilities are not available. Up to now, there has been no diesel motive power of weight, size and horsepower suitable at original and operating costs that would be economically feasible.

Supercharged Diesel

The new EMD turbo-charger in the 2,400-hp SD-24, unlike conventional superchargers, is operated by the engine's gear train when the engine is run at low speed or light load. The positive-displacement roots blower used on present 567 series engines for scavenging exhaust gasses and charging the cylinders with fresh air, is replaced by an exhaust-propelled, turbine-driven compressor. The compressor supplies air as pressures up to 15 psi. An over-running clutch in the gear train allows the turbo-compressor to run free when the exhaust gas energy is sufficient to drive the compressor faster than the engine gear train will turn it.

Several design changes were made in the 567 engine due to the higher loading of the turbocharged version. These include changes in the crank-

(Continued on Page 20)

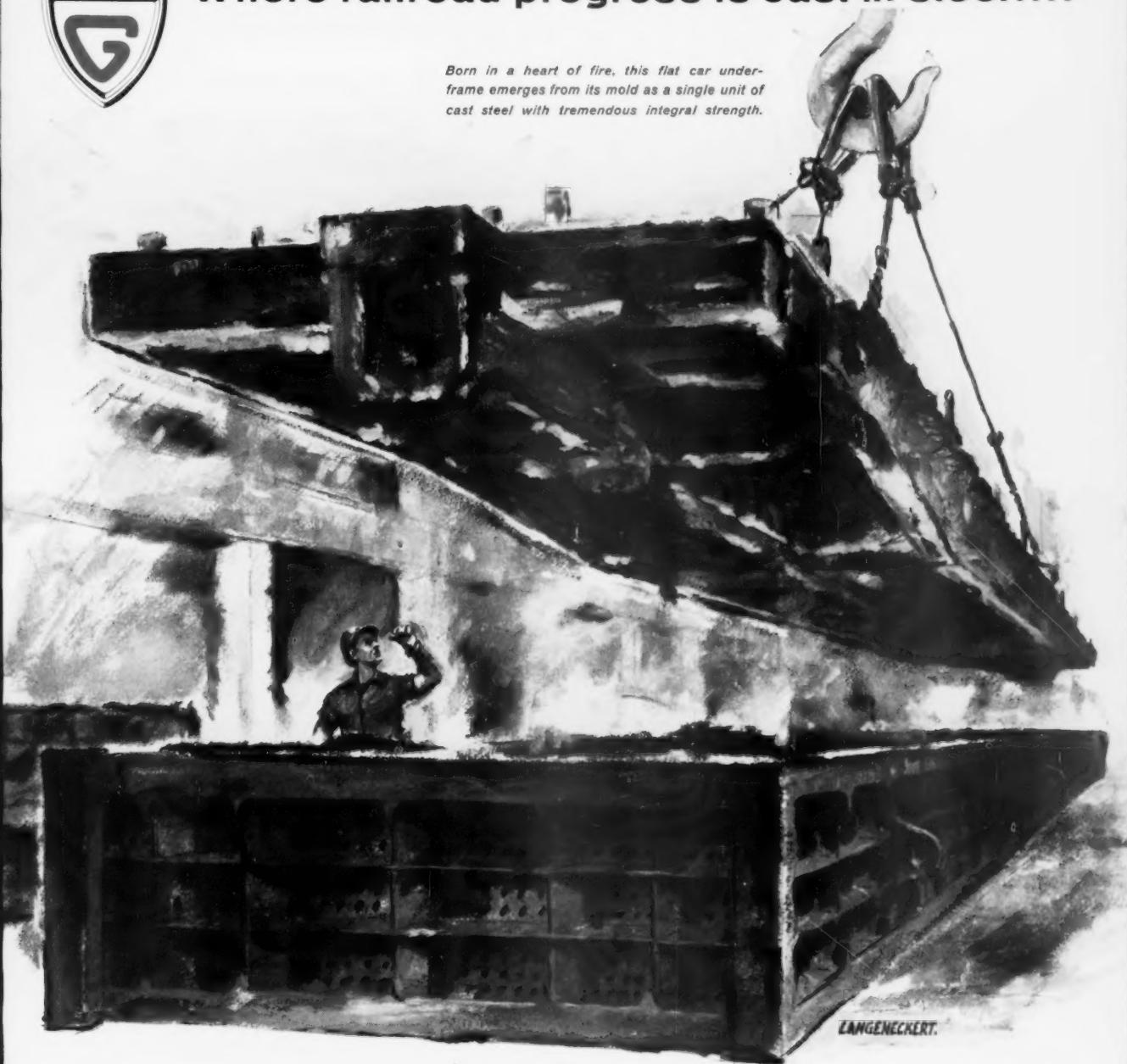


Low axle loading, freight car trucks, and body-mounted motors driving through Cardan shafts characterize the GA-8 export locomotive which has also excited some domestic interest.



Where railroad progress is cast in steel....

Born in a heart of fire, this flat car under-frame emerges from its mold as a single unit of cast steel with tremendous integral strength.



Flat car with one-piece cast steel underframe.
These underframes provide greatest strength at minimum weight, greater availability, lowest maintenance cost.

Over half a century ago, General Steel began with a big idea that promised equally big benefits to railroads—the combining of many separate parts into a rugged one-piece steel casting.

From the great strength and durability of these castings came longer life for railroad equipment, lower upkeep cost and increased operating safety.

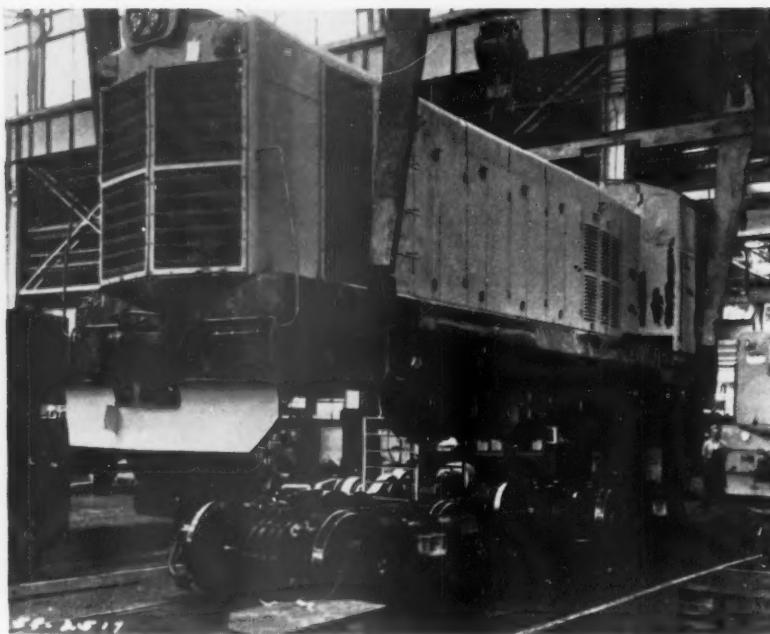
General Steel, together with railroads and other industries using Commonwealth Products, has become bigger and better through the years. Together they set the standard today for progress and service . . . through outstanding performance.

Specify Commonwealth castings . . . your solid investment for today and many years to come.

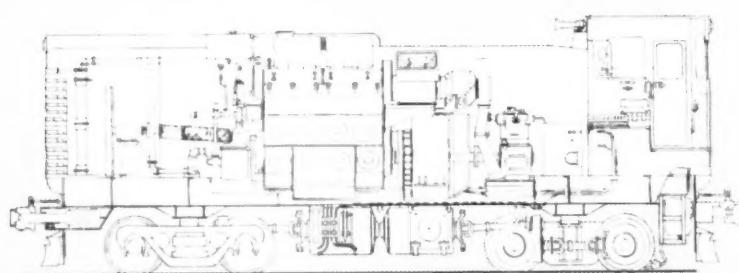
GENERAL STEEL CASTINGS

GRANITE CITY, ILL. • EDDYSTONE, PA. • AVONMORE, PA.





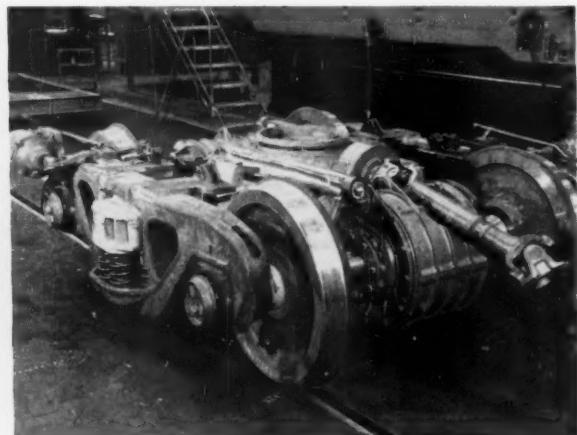
Assembly of new locomotive in the EMD shop shows the body-mounted traction motors. Standard arrangement is for this unit to be operated with the cab leading.



Eight-cylinder, 800-hp diesel is used in the GA-8. Each of the two traction motors drives both axles of one truck through a gear reduction and a series of flexible shafts. Unit can be reduced in height for special low-clearance foreign applications when necessary.



Drive shaft for outer axle passes through the bolster of each truck.



Assembled truck has freight-car style side frames and roller bearings.

case, liner to crankcase seal, piston and rings, piston pin bearing, connecting rod bearing, cylinder head and valve assembly, camshaft, valve gear, injector, oil and water pumps and exhaust manifolds. The SD-24 dimensions are practically the same as the SD-9, except that the roof of the new unit is 6-in. higher. The overall length is 60-ft 8½ in., height is 15 ft 2¾-in., and width over grab-irons is 10 ft 8 in. The total unbalanced weight on the rails is approximately 328,000 lb. It can be ballasted to a maximum of 390,000 lb. The locomotive is equipped with two, three-motor, Flexi-Coil, six-wheel trucks. A choice of gear ratios is available for speeds up to 90 mph.

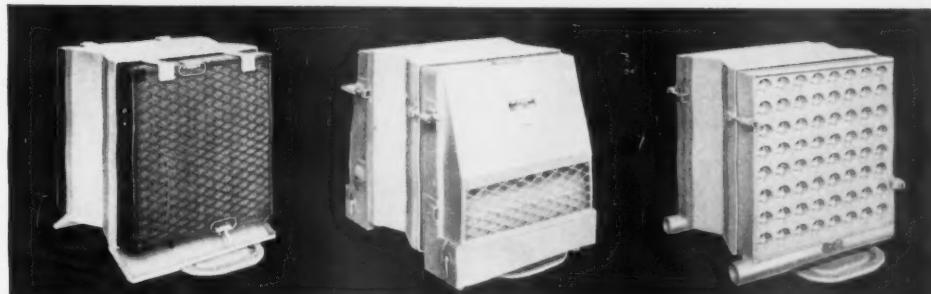
The GA-8 contains a number of radical innovations to fit it to the requirements of the lightly built railroads. The locomotive is 32 ft 6 in. long from buffer to buffer as compared with 40 ft 6 in. in the General Motors domestic 900-hp switching locomotive. It is 12 ft 10½ in. high from the rail, and an optional low cab will bring the height down to 12 ft. This compares to a maximum height of 15 ft 1 in. for a typical GM passenger or freight locomotive. The unit weighs 52 tons, as compared with 100 tons in a 600-hp US switcher. It has a top speed of 52 mph.

Standard production components include an 8-cylinder 567-C engine, a D-15 generator and two basic D-47 motors. The motors have a modified base with the axle caps removed for attachment to the middle portion of the underframe. They can be serviced without removing the trucks. The drive is similar to that previously used on locomotives with hydraulic

(Continued on Page 22)

FARR makes what it takes...

the only complete line of air filters designed for diesel locomotives



IMPINGEMENT TYPE

The Far-Air Type 44-68RH is the standard panel filter for engine intake air on most of American Railroads. Quality built to withstand the severe operating conditions frequently encountered in the railroad industry, this popular type offers efficient filtration, long service life, and simple maintenance.

OIL BATH TYPE

Far-Air Railroad Oil Bath Filters of the new "flat" design embody an entirely new oil bath control which assures full air scrubbing action at a lower resistance than the old fashioned cylindrical units. Designed to fit the filter adapters now in use on most locomotives, it eliminates costly modifications.

CENTRIFUGAL TYPE

Far-Air Rotonamic, a self-cleaning, cyclonic air cleaner, is made exclusively by Farr Company. Over 14,000 Rotonamic panels are now in service on American railroads. Available in field kits, which make it economical to upgrade to a maintenance-free Rotonamic installation. All major locomotive builders offer Rotonamics as original equipment.



This complete line of Far-Air railroad filters assures you the best in engine air-filtration, no matter what type you may select. Farr Company has long experience in designing and building filtration equipment for railroads, in fact Far-Air filters now protect over 85% of all locomotives operating in America.



FARR
COMPANY

CHICAGO

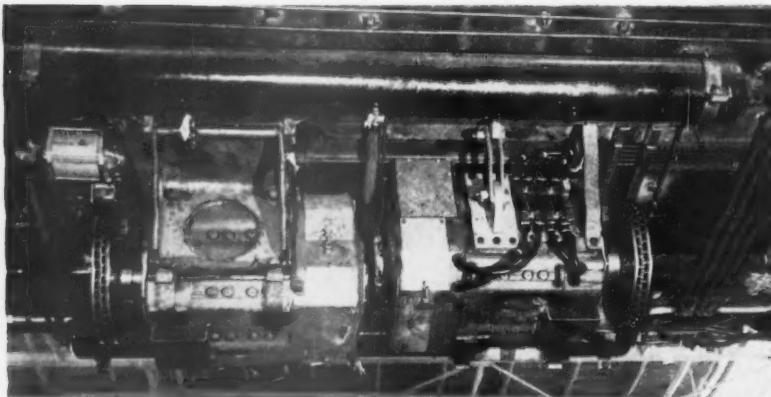
LOS ANGELES

NEW YORK

Manufacturing Licensees:

Farr Company Mfg. Ltd.
Montreal, Canada
The Clyde Engineering Co. Pty. Ltd.
Sydney, Australia
Intermil Ltd.
Birmingham, England

PHONE, WRITE OR WIRE
FOR
TECHNICAL INFORMATION



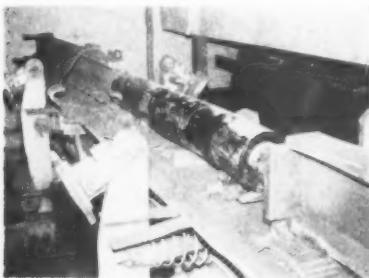
Two D-47 traction motors are suspended under the locomotive's underframe on the GA-8 unit. Braking discs are mounted on the motor shafts. Trucks also have conventional tread brakes activated by cylinders mounted on the side frames.

transmissions. It consists of drive shafts leading from each of the traction motors to bevel gear drives on each axle. While wheel brakes are available, a new system of air-operated disc brakes is also standard. These are applied to each drive shaft where it leaves the traction motor. This is the first application of this type of brake on a modern locomotive. The electrical control system has been simplified because the locomotive is not designed to be operated in multiple.

The GA-8 has attracted considerable attention among railroad men in this country. Preliminary have been made by some railroads.

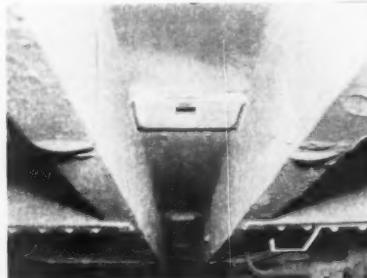
RI Box Cars Get 'Supercushion' Underframes

Twenty-eight 50-ton, 50-ft Rock Island box cars have been fitted with Waugh Type 130-8C supercushioned underframes. These cars are being used for handling shipments of plate glass for automobiles.



One of two cushioning elements is in jig for application to the moving sill.

The work was done at the Rock Island's Blue Island shop, and required the removal of all components from the AAR Z section center sill. These parts included the standard strikers and front draft lugs, draft



Slot in existing sill takes key for rear end of the cushioning element.



Floating sill fits inside the standard Z-section center sill used on these cars.

gears and allied parts, center fillers, rear draft lugs, spacers, and diaphragm pans. A new center sill, complete with cushioning elements, was constructed from 10-in. 33.6 lb. ship-building channels, cover plated top and bottom and inserted in the existing center sill. The two main cushioning units, one at each end, operate in a pocket formed between an integral abutment included in the new center support casting and vertical keys on the old sill.

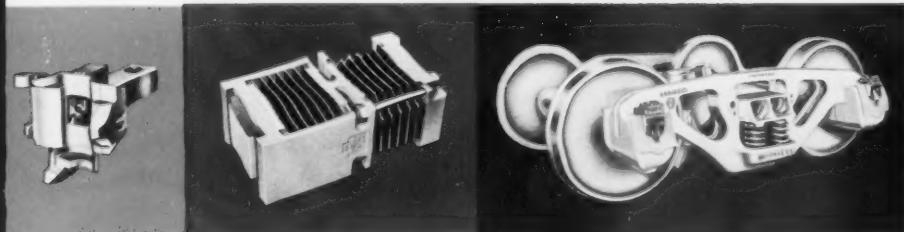
This arrangement provides a continuous draft sill that is flexibly connected to the balance of the car structure. Travel of the draft sill in either direction is a nominal 8-in. The buff unit behind each coupler provides an additional 3-in. movement, bringing the total cushioning travel to 11-in. The longitudinal cushioning capacity of the car is now 130,000 ft-lb as compared to the former capacity of 22,000 ft-lb.

Test applications of three car sets each of Allison KarGo bearings and American Brake Shoe Cartridge Bearing Units were made. The balance of the cars have plain bearings and lubricator pads. One car has recently been equipped with a counter to record center sill movements of 2, 4, 6 and 8-in.

Rock Island officials say this conversion eliminates the necessity of purchasing new cars of special design. Labor and material cost is about a quarter of the cost of a new car, if existing car already has load restraining equipment.

ANNUAL REPORT

to the Railroads



NATIONAL
MALLEABLE AND STEEL
CASTINGS COMPANY
CLEVELAND 6, OHIO

1959 BEGINNING OUR 91ST YEAR OF SERVICE TO THE TRANSPORTATION INDUSTRY

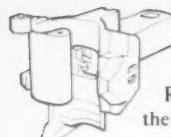
A KEY TO SUCCESSFUL
RAILROADING...



NATIONAL RESEARCH



Two 1,000,000 volt X-ray machines, one at the Sharon, Pennsylvania plant, and one at the Chicago plant, play a vital part in checking the continuing quality of our many different railroad specialties.

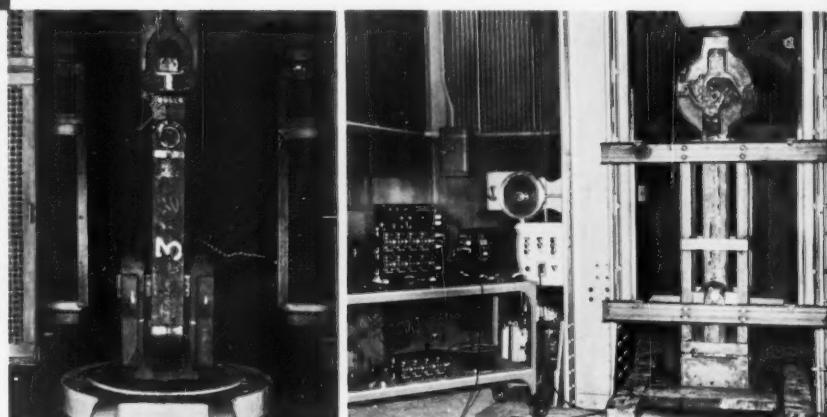


Research has long been recognized at National as providing the key to maintaining product leadership. During this past year National's Technical Center has applied its unmatched facilities to many important projects.

Among these are testing of several new ideas in draft gears which are in the prototype stage . . . development of entirely new concepts in car cushioning . . . product development and improvement in couplers, yokes, trucks and many other railroad specialties.

Research at National's Technical Center is not confined solely to products in National's immediate field. Indeed, many railroads and other industries rely on the facilities of the Technical Center for scientific investigations, particularly where various stresses and strains are involved in the use of the end product.

AA-8516



A Universal Testing Machine, of 1,000,000 pound capacity in either tension or compression, is used for testing yokes.

Mated couplers undergoing tests on 27,000 pound AAR Drop Test Machine. Note complete electronic instrumentation at left to record stresses in couplers.



KEYS TO SUCCESSFUL RAILROADING...

KEYS TO SUCCESSFUL
RAILROADING...



NATIONAL

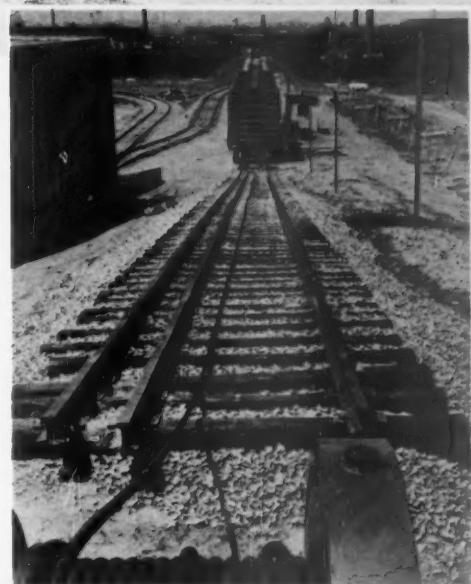
PRODUCT IMPROVEMENT AND SERVICE



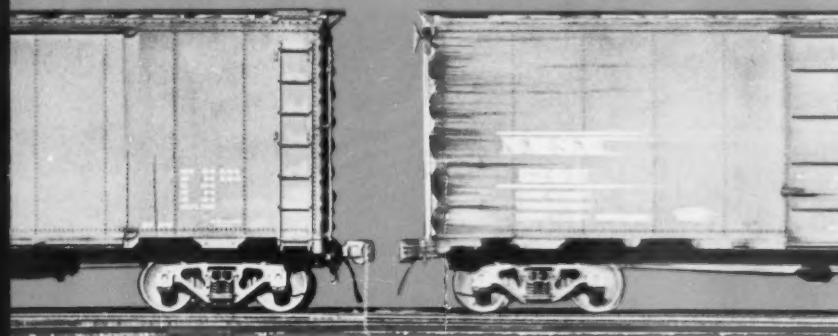
During 1958 National conducted an intensive program of evaluation and analysis on products of its own manufacture as well as those produced by other manufacturers. This program embraced technical investigation, testing, design change and retesting. This continuing evaluation program maintains National's product quality.

National correlates laboratory data, actual service records and road tests with data obtained from the Technical Center's Impact Test Tracks. In addition, National's completely instrumented test cars traveling in regular train service provide valuable information leading to improved draft gears, couplers and trucks.

Customer Service is a vitally important area of National's leadership. During 1958 nearly 1000 inquiries from over 100 railroads and suppliers were processed by the Technical Services Department. Each was handled individually and many resulted in field investigations or trips to the customers' lines or shops.



Each year many railroads, car builders or suppliers use the Impact Test Tracks of National's Technical Center for testing cars or component parts.



Results of scientific impact testing with electronic and mechanical instrumentation have resulted in important improvements in draft gears, couplers, design of car ends, underframes and car doors.

KEYS TO SUCCESSFUL RAILROADING...

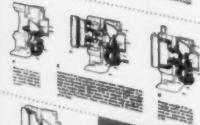
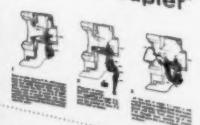


NATIONAL

SERVICE AIDS AND RAILROAD PROMOTION

Coupler Assembly Charts are available for Types E, F and H couplers. A new illustrated Coupler Parts Catalog shows photograph of part, part name, part number and approximate weight.

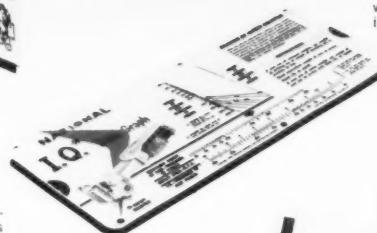
"How to Assemble the Type F Coupler"



Booklet titled "Series Impacts" graphically illustrates impact forces encountered when one car is switched into a string of standing cars.



IQ (Impact Quantum) Slide Graph makes it a simple matter to figure total work done in foot-pounds during car impacts without laborious calculations.



National's series of advertisements promoting the use of railroad service, appearing in a leading traffic publication, has been awarded the coveted Golden Spike by the Association of Railroad Advertising Managers.

The Railroads are Moving Ahead — with

**NATIONAL SPECIALTIES
AND SERVICES**

Established 1868

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • JOURNAL BOXES



Railway Division Headquarters
Cleveland 6, Ohio

International Division Headquarters
Cleveland 6, Ohio

CANADIAN SUBSIDIARY

National Malleable and Steel Castings
Company of Canada, Ltd. • Toronto 1, Ontario



He immediately went to the 'phone and called the shop. "Jim, you've got to have this car set out, and brought to the repair track."

Disappearing Act

By Ken Wright

THERE ARE "THOSE" DAYS. This had been one of them. Everything had gone wrong. It left the whole gang wishing the day would end.

When the office received a phone call about a mechanical refrigerator car in trouble, Big Jim thought to himself, "Pete will really put the cap on the bottle when I send him out on this one." Jim walked out to Pete and said, "Pete, we've got more trouble. The temperature on PFE 300342 is reported as going up. You go check it."

"Oh no!" wailed Pete, "Fifteen minutes ago you told me to get on this job and get it done. You were hurting for it. Now you come up with another one and I haven't even gotten a good start here."

"Can't be helped, Pete," replied Jim. "These mechanical cars come first. You're the only one I can send right now."

"Get tools out, put 'em away; that's all I get done," muttered Pete. Then out loud he asked, "What was

that car number again and where's it located?"

As Pete approached the car, he could hear the engine running. At least there should be no trouble there. He had been so busy complaining that it hadn't occurred to Pete that this car might have equipment with which he was not familiar. Above the door of the machinery compartment was painted *Detroit Diesel—Carrier*. This made Pete realize he had better get his mind on his job. But, he quickly found there was little difference in the arrangement of this equipment even though this was a system with which he had had no previous experience.

Temperature gauges on the side of the car showed plus two and plus five. Pete removed the log book from its holder and found the car had been loaded 48 hours earlier. The temperatures had ranged well below zero up until now. Whatever had happened had taken place since the last inspection six hours ago at AR Junction.

Pete opened the machinery compartment door. The pilot lights indicated that both compressors were running. That told him the electric control system must be functioning. No need to check overload circuit

breakers and fuses. He then felt the compressors. Both were warm, but one seemed warmer than the other. He noted that the condenser fan was running and then looked into the sight glasses of the receiver tanks.

The car had a dual system—two compressors, two condensers, two evaporators, two expansion valves, and two receivers. There were two of each of the components. The condensers and evaporators were assembled in single units. One receiver tank showed an ample supply of refrigerant but the other showed hardly any Freon.

Pete quickly decided that he couldn't correct the condition fast enough to allow the car to continue in that train. He immediately went to the intercom and called the shop. "Jim you've got to have this car set out, and brought to the repair track. One unit is out of Freon."

Questions popped into Jim's mind, but he had learned to trust Pete's judgment. He would hold the questions till later.

There was nothing more Pete could do to the car till it got to the shop. He headed back. When he got there, he immediately went to the office and asked, "Do you want me to work overtime on this, Jim?"

This is the fifth article in this series, discussing the operation, maintenance and trouble shooting of mechanical refrigerator cars.

"Yes, I do, Pete. I'm not supposed to work anybody overtime, but this is an emergency I can't get around. I've sent Tony after a bottle of Freon for you, and I'm going to let him stay with you. How long do you think it will take?"

"It shouldn't take more than an hour, after the car gets here. That is if there isn't another leak."

Jim looked up at Pete and asked, "What do you mean 'another leak'? Did you find one?"

Pete grinned. "I think I did, and it won't be hard to fix. You know, Jim, when you lose Freon there has to be a leak. With all of the oily residue left around the discharge valve of the compressor, it looked like somebody didn't put the gauge connection plug in tight, and forgot to back seat the service valve. We'll probably have to add oil too."

"Remember, I told the class the other day," Pete went on, "oh no! That was another day you couldn't be there. Well, any time you lose Freon you also lose oil. Freon carries the oil with it. About seven per cent oil is carried. That's why a Freon leak can usually be detected by the oily residue. The Freon vaporizes and disappears; but the oil will remain. I'm sure glad those refrigeration tools got here. We'll need them."

There was quite a delay before the car was spotted on the shop track. In the meantime, Pete and Tony had assembled the tools and equipment they would need. When the car arrived, Pete tightened the gage connection plug and back seated the discharge valve. He then attached the test gage manifold to the suction service valve of the compressor at the gage connection. He left the connection slightly loose and then attached the charging line between the Freon bottle and the center connection of the test gage manifold.

Opening the valve on the Freon bottle and the valve at the test gage manifold, he purged the charging hoses of all air. Then he tightened the gage line at the suction service valve on the compressor. Next he closed the test gage manifold valve. He then turned the suction service valve off its back seat about two turns. The compressor was running so that opening the test gage manifold valve allowed Freon to be drawn into the system.

"Pete," Tony queried, "shouldn't we turn this bottle of Freon over so the Freon will run out faster?"

"Oh, no! We don't want liquid refrigerant! We only want gas drawn off the top of the bottle. You see, we are connected to the suction side of the compressor and that is lowering the pressure in the bottle. As the pressure goes down," continued Pete, "the liquid will boil and vaporize, and we continue to draw off the vapor. On the other hand, can you imagine what would happen if you poured a liquid of any kind into the intake of an engine or air compressor when it was running?"

"Sure," Tony replied, "the liquid wouldn't compress and it would smash the pistons or heads."

"Well that's what would happen here," Pete said. "Some people think that it takes too long to add gas, but I have found that you can add gas as fast as you can add liquid and it is far safer. In some cases, when a system is completely dry and receiving its initial charge, liquid is added to the high side. However, we don't do it if some is being added to make up a loss through the suction or low side."

After a small amount of refrigerant had been added, Pete turned off the valve at the test gage manifold and placed a piece of cardboard over the condenser. This raised the head or high side pressure. By causing the head pressure to increase, any leak still remaining would readily show up. He then took the Halide leak detector and went over the entire system checking to see that there were no other leaks.

Satisfied that the leak at the discharge service valve had been the only one, he then finished filling the system with Freon. Watching the level of liquid refrigerant in the receiver tank told him when the correct amount had been added. By closing the outlet of the receiver so that all of the refrigerant was trapped there, the level would be not more than one half of the upper sight glass. Before he disconnected the Freon bottle and charging lines, he also checked the oil level in the compressor through the sight glass in the compressor body.

"See this level, Tony," Pete indicated. "It isn't so low that we need to add oil. We're lucky. It would require a little more time to do that. Don't forget to always check this. Add oil, if necessary, whenever Freon has been lost. But, be sure to follow the individual manufacturer's instructions for adding oil. Some compressors would have the oil added through the suction valve the same as Freon. On some other compressors that would be wrong and dangerous."

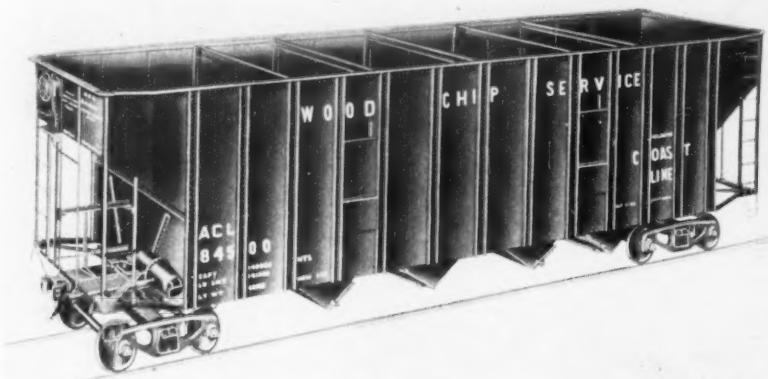
Just as the two fellows were closing up the machinery compartment door and rescaling it, Big Jim walked up. "Is it ready to go, fellows?"

"Yeah, you can give it back to the yard now," replied Pete.

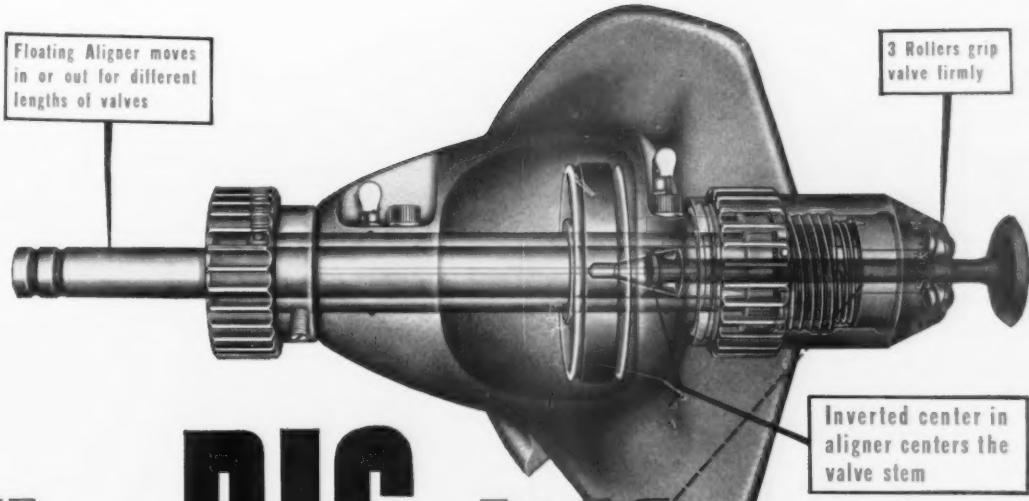
"I thought," said Big Jim, "you were going to be done in an hour."

"You mean you are going to question 15 min over my guess?" asked Pete.

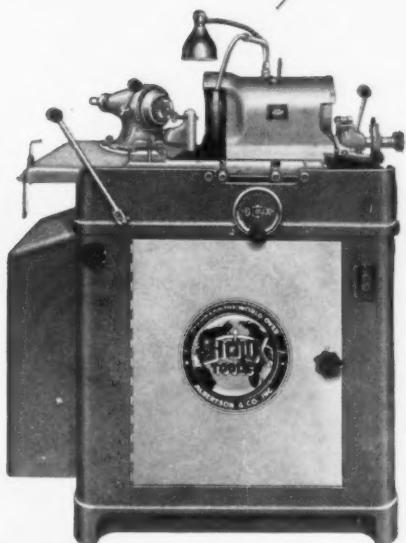
"No, I surely won't," grinned Jim.



NEW CAR DESIGN, providing paper industry with the largest open-top, wood-chip hopper of its capacity, has been announced by the Atlantic Coast Line, ACL's Waycross, Ga., shop will build 200 of these cars at the rate of 20 to 25 per month, starting in February. Designed by the ACL, these cars will be more than 15 ft high and 50 ft long producing a total capacity of 5,400 cu ft. The all-riveted cars will have roller-bearing trucks. Interiors will be coated with acrylic-type paint to prevent corrosion and provide a slippery interior surface. Use of wood chips has increased from 6,000 cords in 1953 to 1,203,000 cords in 1957—now 6 per cent of the total wood pulp production.



The BIG difference is in the **Sioux** QUICK-ACTING **ROLLER CHUCK!**



IF you had to choose one feature making the largest contribution to the speed and accuracy of the Sioux Valve Face Grinding Machine it probably would be the quick-acting, easily cleaned, roller chuck. The inverted center floating aligner holds the valve accurately in the position in which it operates in the engine while valves are ground to within .001". It's fast, easy and accurate.

But as in all fine machinery, there is precision in a multitude of details. Belts absorb vibration . . . a cast iron base provides rigidity and weight . . . way bars are precision made, hardened and ground to close limits, and wet grinding eliminates heat and distortion.

For over 25 years men who have to lay down their hard earned money have been comparing and choosing the machine they liked best. The results are that today there are more Sioux Valve Face Grinding Machines in use than all others combined. Buy Sioux and you buy the finest.



ALBERTSON & CO., INC.
SIOUX CITY, IOWA, U.S.A.

NEW AIR IMPACT WRENCHES • NEW AIR SCREWDRIVERS • NEW "PELICAN" NUT ACCUMULATORS
• ELECTRIC IMPACT WRENCHES • DRILLS • GRINDERS • SANDERS • POLISHERS • VALVE FACE
GRINDING MACHINES • SCREWDRIVERS • PORTABLE SAWS • FLEXIBLE SHAFTS • ABRASIVE DISCS



'Push-Pull' Cars Ordered by C&NW

Cab cars for DEMU trains will have cabs on the gallery level as shown by this artist's retouching. These gallery cars will seat 161 passengers. One of these cars will be located on the Chicago end of each train and at least one other "cab" car will be located at an intermediate point in the consist. Locomotive cab will be used for operation of outboard trains.

SUBURBAN OPERATIONS out of Chicago on the Chicago & North Western would be changed greatly following the delivery of 36 gallery-type cars just ordered from Pullman-Standard. These cars will be completed in 1959 and are to cost \$5,600,000.

The eight "cab" cars and 28 "trailers" are of a design which Pullman-Standard calls DEMU—diesel energized multiple unit. These 36 cars could be the first of some 90 "push-pull" gallery cars the C&NW would need in the modernization of its suburban car fleet.

The 36 cars will provide equipment for four trains of nine cars, each of which will have a cab at the rear and also at some point within the train.

Composed of conventional locomotive and coaches, "push-pull" trains should be almost as flexible as RDC and multiple-unit electric trains.

They never need to be turned. They would be operated from a cab at the rear of the last car as easily as from the locomotive itself.

A conventional locomotive provides power to move the train as well as an operating cab for movement in one direction. The cab at the rear of the last car controls the train when it is moving in the opposite direction. An electric trainline and special air brake features give the "cab car" as much control over the diesel engine and brakes as the locomotive cab.

With "cab cars" spotted at intervals within a train's consist, the train could be reduced in carrying capacity by merely uncoupling a few cars.

"Push-pull" would give this com-

muter service operating benefits found in electric m-u operation. Among them are immediate availability of trains for return movement, greater flexibility of train size, and reduced need for terminal switching.

For motive power, C&NW would use General Motors F-7 freight cab units. They would be equipped with 480-volt diesel-electric alternators for head-end power and apparatus necessary to provide for remote control.

In practice, DEMU trains would be operated with the locomotive always at the north or west end. This means that commuters coming to Chicago in the morning would have the locomotive behind them. For off-peak service, the engine and three cars could be uncoupled in the station for departure as soon as loaded. No switching would be needed to release the locomotive.

Then, on its last trip into Chicago before the evening rush, the shortened train could be recoupled to the cars it left in the station that morning. It would be ready to move out as a train of full capacity.

Car Controls

The "push-pull" controls themselves will be complete, yet so compact that only six seats in the galleries would be sacrificed. Cab controls would consist essentially of a standard locomotive controller and Westinghouse type 26 brake valve, plus other normal cab equipment. To provide for proper control of the brake pipe, the cab car would have a supplemental main reservoir supplied by its own air line direct from the locomotive's compressor system.

Compared with one of North Western's existing gallery cars, the

DEMU design stacks up favorably both in weight and cost. Lighter by some nine tons, its first cost would be less than that of a car equipped with its own propane power plant and steam heat. The cost of a cab car, even with its special equipment, would be less than that of a present-day gallery car.

DEMU car interiors will have as nearly a permanent finish as possible. Plastics, bright metals and baked enamel would be used liberally. Windows, equipped with tinted glass, would have no shades.

Aside from "push-pull", the biggest innovation will be the all-electric heating and air-conditioning. Instead of the conventional 32 volts d-c, 480 volts a-c would be used. Electric heating units, a-c fluorescent strip lighting, and package air-conditioners should come closer to having commercial components. An electric communication signal will be used.

The cars will have composition brake shoes, and Westinghouse Air Brake's package units.

After getting the first 36 DEMU cars in service, the C&NW has revealed plans to purchase possibly 54 more cars. Ultimately 30 gallery cars would be DEMU cabs. All of the present 48 gallery coaches would be rebuilt for the DEMU service. A large number of obsolete suburban coaches would be retired, and 148 existing coaches with roller bearings would be air conditioned and equipped with the DEMU controls.

Sixty F-7 freight cab units would be utilized ultimately, and the road switchers now used in suburban service would be assigned to freight service.

New Oakite Liqui-Det sends car interior cleaning costs spiraling ...DOWN ...DOWN ...DOWN

...gives you the
important advantage ...
low-cost end results

Floor to ceiling—that's where new Oakite Liqui-Det works to chase dirt from car interiors. This single, sudsing detergent renovates head and side linings, upholstery, trim, floors, and carpets alike... frees the whole interior from clinging grime, and does it gently, safely, thoroughly.

Packaged in concentrated liquid form, Liqui-Det works at low concentrations for maximum economy. It forms a sudsy solution instantly. No need to stir, no waiting, no heating necessary. Works especially well in hard water.

While kind to fabrics, metals, wood, plastic, paint—even hands—it's geared for tough work, too. Used as a pre-spray on trucks, Liqui-Det requires no brushing, removes soil immediately, thoroughly.

Ask the local Oakite man to demonstrate. Or, send for details. Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.



In our 50th year



**Cut cleaning costs?
Solution is "modernize"
not "eliminate"**

"With maintenance pinched by cost-cutting programs, it could become quite a problem to keep up proper cleaning," says Sterling Killebrew, manager of the Railroad Division of Oakite Products, Inc.



"Reducing cleaning schedules is no answer. Cleaning is necessary from both an 'in-service' and a public relations viewpoint."

A better answer lies in more effective cleaning materials and in more mechanization of cleaning procedures, Mr. Killebrew said.

"Modern methods can improve car and locomotive appearance and keep up maintenance cleaning without adding manhours, and at substantially lower costs," Mr. Killebrew cited several case histories.

Saves \$2600 monthly, in car-washing costs

"One road switched from a so-called 'economy' product to an Oakite material in its automatic car washer. The Oakite cleaner loosened road dirt more thoroughly, eliminating costly hand-finishing. Yet, it worked at more dilute concentrations . . . actually cost \$2600 less for one month's supply.

Mechanization cuts tank car cleaning by \$1600

Another line, he said, cleaned 135 tank cars manually for \$5200. By mechanizing the job, the same number was cleaned faster, more effectively, and with one-third the material consumption. Cost: \$3600.

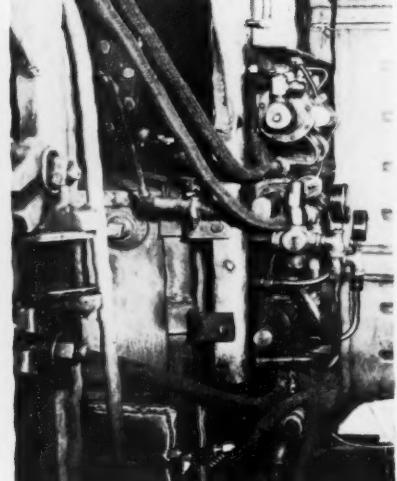
Quality Cleaner pays off at \$800 a month

In a "cost-saving" move, a third road was using an "inexpensive" material for washing diesel exteriors. Cleaning one engine required 20 gallons of high-concentrate cleaning solution. Costing just pennies more per pound, an Oakite material gave them the same cleaning with only 5.6 gallons of low-concentrate solution. Net result: savings of \$800 a month using the more "expensive" cleaner.

"Examples like these are common," Mr. Killebrew concluded. "Ask any Oakite man to tell you more."



Vapor Phase equipment at rear of F unit carbody includes 1) 20 psi safety valves, 2) thermostatic air vents, 3) steam separators, 4) condenser, 5) steam pressure regulator, and 6) flexible coupling. Cooling water from condenser goes through regular radiators.



Nemech dual fuel control is installed at rear of unit under Vapor Phase equipment. Nemech unit proportions light and heavy fuels.

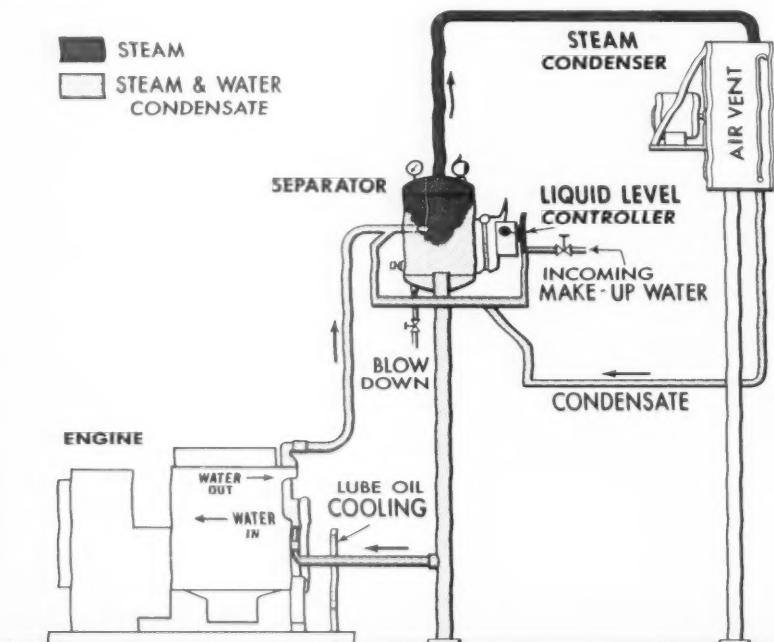
GN Cools Diesel With Boiling Water

FOR OVER A YEAR, the Great Northern has been testing Vapor Phase cooling on an EMD F-7 locomotive equipped with a dual-fuel system. Vapor Phase cooling, which is entirely automatic, uses the natural law of boiling in place of the normal cooling for circulating water in the engine. The first test run on the GN was made Nov. 22, 1957. The locomotive has operated continuously since then, requiring no attention by engine crews and very little from

maintenance forces. While Vapor Phase cooling has been in industrial, commercial and marine use since 1938, this is the first application to be made on a diesel locomotive.

The new cooling system was applied to a 567-BC, 16-cylinder, standard "B" engine converted to "C" liners. The dual fuel equipment consists of the Nemech system of changeover control, heat exchangers and filters. There has been no noticeable change in the performance of

the locomotive except for increase in horsepower due to the higher Btu content per pound of the heavier fuel. However, when compared with other dual-fuel units without Vapor Phase, the GN believes the new system is keeping the engine cleaner. There is less loading on the Michiana filters and the lube oil stays cleaner. The locomotive is assigned to a freight pool operating between Minneapolis and Grand Forks, N.D., a distance of 320 miles. Full tonnage is hauled, at

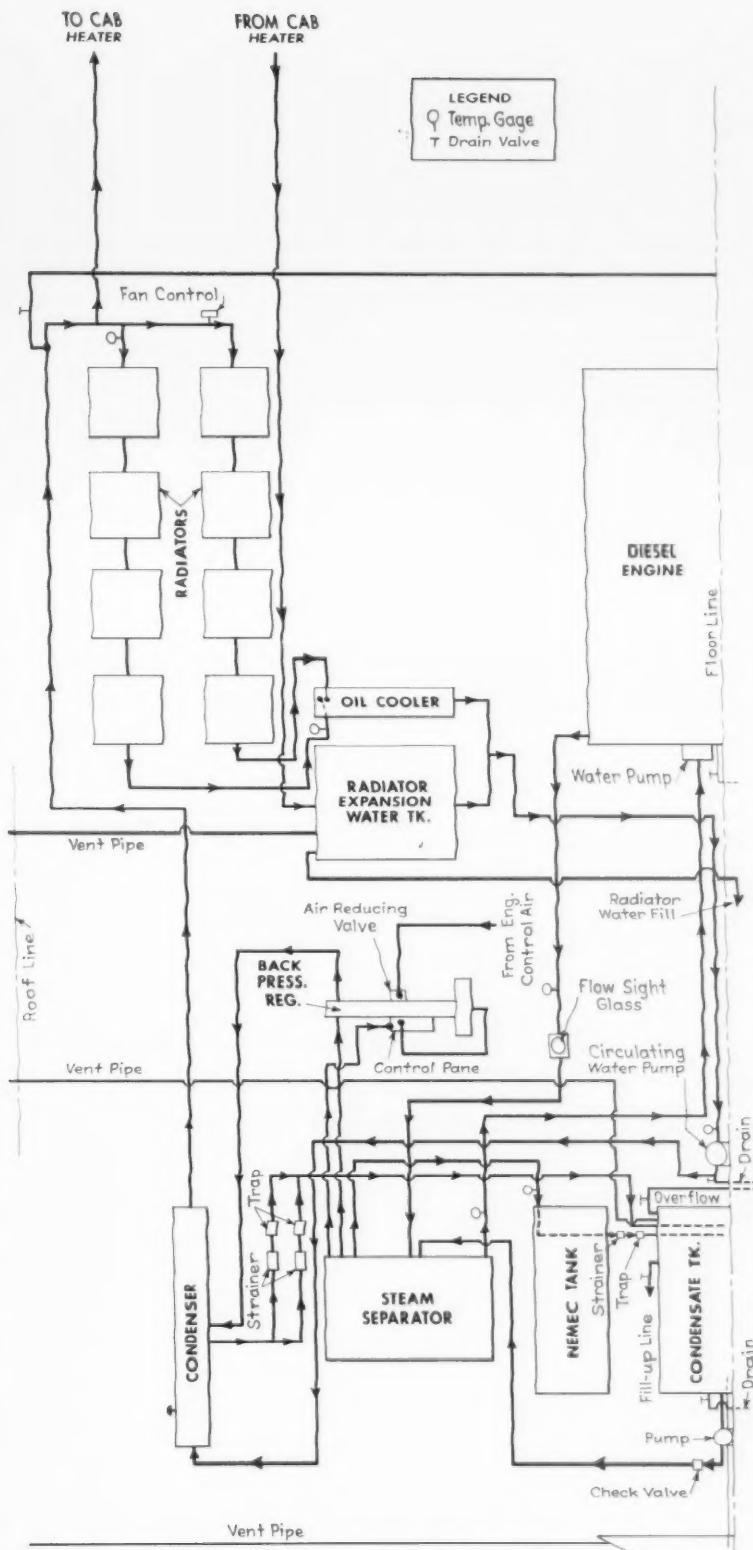


How Vapor Phase Operates

As water passes through the engine jackets and picks up the waste heat, a small quantity of steam is formed. The water and steam mixture enters the Vapor Phase separator where the water is centrifugally separated from the steam, and is returned to the jacket. The steam from the separator passes into the header pipe where it is available for use in the heating system, or if not needed, passes to the steam condenser. The condensed steam returns to a condensate receiver from which it can be pumped under pressure back to the individual separators.

Steam pressure on the whole system will be controlled by the rate that the steam is used or condensed. If the pressure continues to build up above the desired operating pressure, the pressure control valve will open and admit steam to the condenser. Since Vapor Phase is a closed system, low water make-up requirements reduce supply and treatment problems.

The normal operating range for Vapor Phase is from boiling to over 250 deg. Other systems operate at from 130 to 175 deg. Higher jacket temperatures are said to reduce internal stresses and cylinder condensation.



Vapor Phase installation was successfully fitted in diesel unit carbody. Because engine temperatures are maintained at above dew point (194 deg), it is claimed that fuel oils containing high sulfur can be burned successfully. Acid formation is minimized because combustion vapors cannot condense.

mostly throttle eight position. Heavy fuel is used at an overall 8-to-1 ratio with the light fuel.

Standard components for stationary Vapor Phase applications were adapted for use with standard EMD equipment on the locomotive. In applying the Vapor Phase system, the water discharge at the rear of the engine was blanked off. Water is now taken at the front discharge opening for convenient connection to the two steam separators located at the rear of the carbody.

Other connections were made to separate the radiator water circuit from the jacket water circuit. Radiator water now flows from the radiators to the oil cooler, through a 450 gpm motor-driven circulating pump, through the condenser, and back to the front end of the radiators. Lubricating oil is cooled by the radiator water.

After the initial tests, the expansion and condensate tanks were increased in size. Larger traps were installed to the condensate return line at condenser. A temperature sensitive switch was applied to override the changeover signal until the fuel oil reached proper temperature for good atomization at the injectors. The bulb for this switch was placed in the fuel oil line coming out of the NEMEC heat exchanger.

Until July 1, 1958, the GN used a residual blend fuel of the following characteristics: viscosity—150 Ssu, color—black, sulphur—3 per cent, carbon residue—7.92 per cent, and ash—0.19 per cent. A 500 Ssu residual blend with a nominal 3 per cent sulphur and a slightly higher Btu content was used starting July 1. The results of this test will indicate whether this heavier fuel can be used. Since the fuel has to be heated for proper viscosity at the injectors, GN men believe there will not be sufficient heat available to use a fuel much heavier than 500 Ssu.

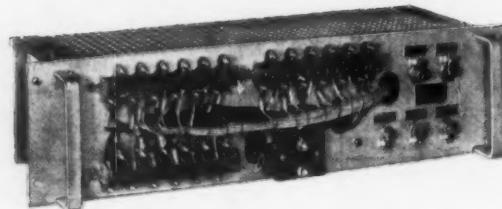
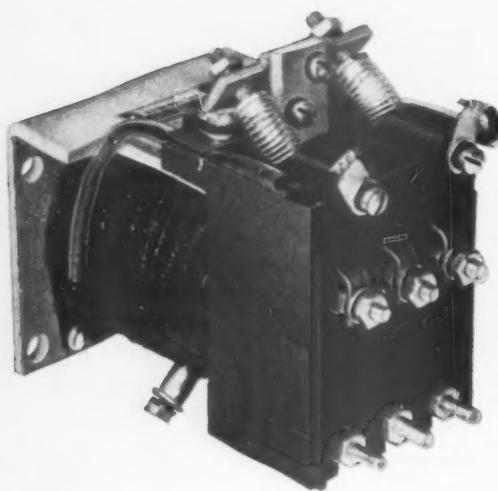
Officials of Engineering Controls Inc., developers of and manufacturers of Vapor Phase, say that future production units for diesel locomotives will use air-cooled condensers and direct air-cooled lube oil coolers in place of the present radiators. This would eliminate the separate water circuit and any requirement for tube and shell condensers or oil coolers. Fans could be operated with motors or with steam turbines using some of the low pressure steam from the jacket circuit.

MODERNIZING YOUR ROAD LOCOMOTIVES WITH . . .

G-E Simplified Amplidyne Control Kits Will:

- **Reduce Maintenance**
- **Improve Reliability**
- **Standardize Renewal Parts Inventories**

GENERAL ELECTRIC SIMPLIFIED AMPLIDYNE CONTROL MODERNIZATION



RUGGED, RAILROAD-TYPE RELAYS contained in G.E.'s Simplified Amplidyne Control Modernization Kit have heavy-duty contacts and stud-type connections. Less frequent maintenance is needed.

CONTROL PANELS contain only non-moving circuit components. Panels are designed for ease of handling and accessibility.

Your locomotive builder can tell you about the many other improved components

Progress Is Our Most Important Product

GENERAL ELECTRIC

A TIME-SAVING, COST-CUTTING, MODERNIZATION PACKAGE for your G.E. amplidyne control equipped road locomotives has been developed. It's General Electric's Simplified Amplidyne Control Modernization Kit. Already proving itself through day to day use, this kit supplies the simplest control system possible—consistent with adequate protection and efficient operation of the locomotive equipment.

Improvements resulting from 12 years of experience with amplidyne control have been incorporated into compact modernization packages. Many railroads have installed these kits on hundreds of locomotives and are now realizing improved, more efficient performance plus savings in maintenance dollars.

Installation of this modernization kit will upgrade and standardize your equipment. With this kit you retain many existing components for re-use and modification within the system. Re-cabling of your fleet with General Electric's

new, improved locomotive wire and cable will further increase the value received from your investment in locomotive overhaul.

Here are a few of the ways you will benefit from this General Electric advance:

REDUCED MAINTENANCE. Elimination of 8 relays, 49 interlock circuits, 4 circuit breakers, 2 capacitors, and 3 resistors is made possible by Simplified Amplidyne Control. Control wiring has been reduced as much as 25 percent and numerous wire terminations are also eliminated.

The package includes rugged railroad-type relays using stud-type connections, eliminating the need for soldered terminals. All control panels are consolidated in the locomotive control compartment. All panel connections are made by use of stud-type terminals, eliminating plug-in devices.

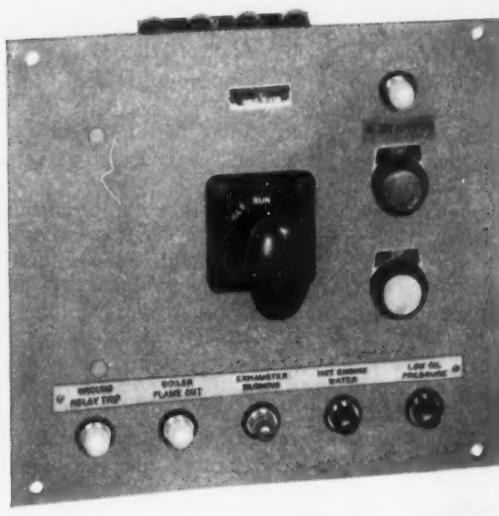
IMPROVED RELIABILITY. You provide increased protection against grounds

and component failures by installing Simplified Amplidyne Control. Not only are the supplied parts within the kit new, their basic construction has been simplified. This **simplification** and **upgrading** of your equipment results in improved locomotive reliability.

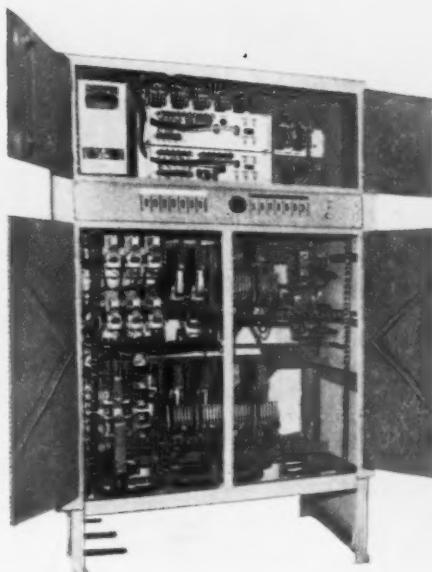
STANDARDIZED RENEWAL PARTS INVENTORIES. Reduction in the variety of electrical panels and devices used in locomotives and fleets of differing vintages and ratings is accomplished through the use of Simplified Amplidyne Control. This standardization increases the utilization of renewal parts inventories. It also simplifies maintenance routine and instructions.

UP-GRADE YOUR G-E EQUIPPED ROAD LOCOMOTIVE during its next overhaul by installing this Simplified Amplidyne Control Modernization Kit. For more information, contact your locomotive builder directly. General Electric Company, Locomotive and Car Equipment Department, Erie, Pennsylvania. 128-65

KIT CONTAINS IMPROVED COMPONENTS FOR EASIER INSTALLATION



COMPACT ENGINE-START PANEL simplifies start-up procedure. Starting switch is of push-button type, while engine control switch has only two positions to operate.



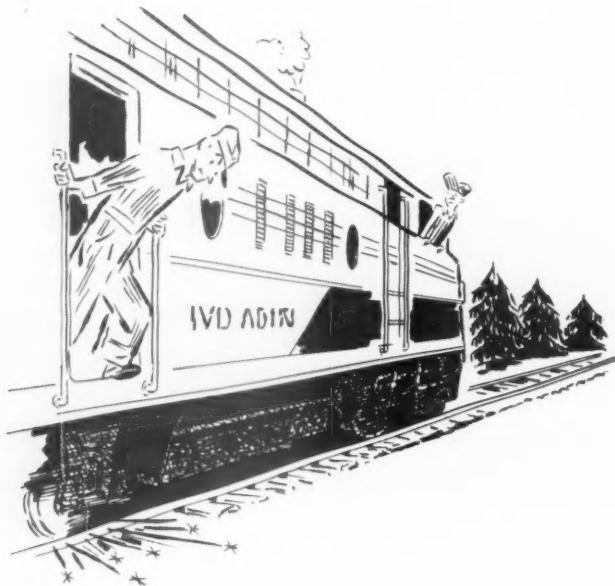
MAIN CONTROL COMPARTMENT shows new wiring and Simplified Amplidyne Control equipment in place. Note compact arrangement and accessibility of components.

that make up General Electric's Simplified Amplidyne Control Modernization Kit.

Progress Is Our Most Important Product

GENERAL  **ELECTRIC**

Crew Stalls To Keep Locomotive from Stalling



by Gordon Taylor

Engineer Casey and Fireman Smith boarded the two-unit FP9 diesel passenger locomotive with every expectation of an uneventful trip home. Everything seemed to be fine until the locomotive was about 30 miles from the home terminal. Then Engineer Casey began to notice wheel slip indications. He reduced the throttle position slightly and then re-applied power gradually with the application of a little sand to the rail. This did not clear up the situation. At intervals the wheel slip light continued to blink its message that something was troubling the locomotive.

The wheel slip signal light did not remain "on" continuously, which would have indicated a locked or sliding wheel. It would blink intermittently.

Casey then asked Smith to go back through the units to see if he could find the source of trouble. In the meantime, the engineer had reduced the throttle producing a speed of about 30 mph. Smith stepped back

into the engine room of the lead A unit and opened the side door to see if he could detect any odor or see smoke from a hot bearing.

His search indicated that something was wrong with the lead motor on the rear truck. There was the smoke and odor of a hot bearing—either a suspension bearing or an armature bearing. Indications were that while the wheels were not yet sliding, some condition existed which might easily develop into a case of sliding wheels. The fireman promptly went to the engine control panel and isolated the engine on the lead unit. He acted wisely to reduce the strain on the motor bearings.

There was no good place to stop the train on the main line. Smith then rejoined his engineer for a short consultation, and they decided to continue at slow speed in the hope of reaching the home terminal. The experience of these men indicated that if they stopped the train, they would probably have a pair of locked wheels that would strand them until someone could come with a cutting torch to cut the motor pinion loose. Their next action was to throw off a note at a way station, asking that the dispatcher be notified not to stop the

train unless absolutely necessary until it reached its terminal.

While the engineer continued operation at a speed of about 15 to 20 mph, the fireman spent considerable time checking the movement of that pair of wheels from a position on the side steps. The train continued slowly on its way until it made its station stop at the division point. There, the crew's decision was confirmed. When an attempt was made to start the locomotive, it was found that the troublesome pair of wheels was tightly locked and started to slide. It was necessary to cut the motor pinion loose before the unit could be moved to the repair shop.

The motor was badly damaged because of a broken armature bearing on the pinion end, but teamwork and good judgment on the part of the locomotive crew had avoided a complete tie up and long delay in handling an important train. Had the train been stopped at the first sign of trouble, there might have been other trains tied up until the line could have been cleared of the stalled locomotive.

This note does not recommend this procedure for all cases. Each case requires careful consideration with good judgment to make the proper decision. If the wheels actually lock and start to slide, then the usual course of action is to drag the unit at very slow speed to a nearby side track, if one is available.

If there is no nearby siding, it is necessary to contact the dispatcher and call for a mechanic with a cutting torch to release the motor drag by cutting the pinion gear loose. The unit is then towed to the nearest repair shop.

This sort of situation is easier to handle on a passenger train which is shorter and lighter than a freight. Two definitions of "stall" could be applied in this case. For the locomotive to have stalled would have meant a complete stop. For the crew to stall, as one Webster definition has it, is "To keep a given situation going until relief or change can be effected." The crew was successful in doing just that.

This series of articles is based on actual experiences of men who operate and maintain diesel-electric locomotives.



After the Tornado—Red Cross helps rebuild a shattered town.

On the job... when you need it most

The twister passed in a single devastating moment. Months later, Red Cross help was still there.

It was a *big* job. Houses, stores, barns—half the town lay in ruins. Red Cross helped build it up again—absolutely free. About 85¢ of each Red Cross disaster dollar goes for this purpose and it is *all an outright gift*. Nothing is sold or loaned.

Last year 41,000 Americans received such disaster assistance. Give generously this year. You can count on Red Cross to be on the job—when you need it most.

**America's great
volunteer
task force**



**3 reasons why
SMART MECHANICS
choose TOLEDO**

still new—already these three TOLEDO's are favorites with men who want the best. Like all TOLEDO tools, they're built to last . . . built to give a lifetime of solid satisfaction.

New Cam-Type
Die Head



A LIFETIME OF SERVICE
The No. 66 and 44 make threading easy. Floating scroll assures longer wear—only controls thread size. Pipe stays centered—held by elongated jaws in centering device. Threads over, under and standard size threads.

7C
Vise
Stand

NO MORE KNUCKLE-BUSTING—Easy to carry—set up, won't fold, the 7C Chain Vise holds pipe $\frac{1}{8}$ " to 5". Compound leverage applied to chain requires minimum turns on screw. Tightening handle on top . . . 3 pipe benders over rear leg. 7Y with yoke vise $\frac{1}{8}$ " to $2\frac{1}{2}$ ". Easy to convert from yoke to chain, chain to yoke.



**4 Pipe Cutters
1/8" to 2"**

**NEW FROM
HOOK
TO HANDLE**



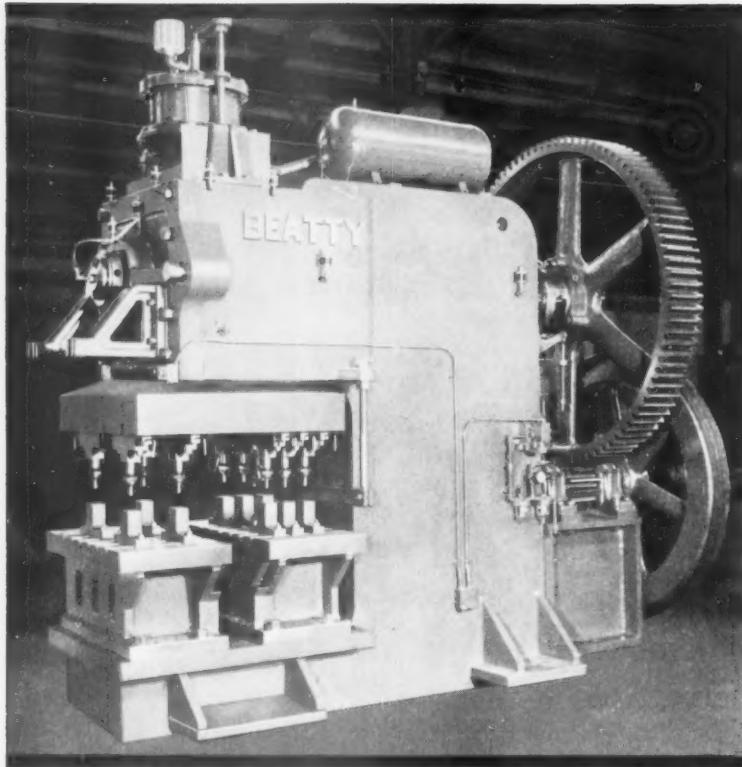
Send for free catalogs on all 3 tools today

SOLD THROUGH YOUR FAVORITE DISTRIBUTOR

BUILDERS OF THE WORLD'S FINEST PIPE TOOLS
TOLEDO
PIPE THREADERS • PIPE WRENCHES • PIPE MACHINES

THE TOLEDO PIPE THREADING MACHINE CO., TOLEDO 4, OHIO, U.S.A.

PUNCH 34 PATTERNS WITHOUT TOOL CHANGE



Beatty Machine Punches $2\frac{1}{2}$ " Hole Through $1\frac{1}{2}$ " Steel—or a Number of Smaller Round or Shaped Holes

Here's versatility and speed that cuts costs—boosts production every hour of operation. The Beatty Heavy Duty Punch with tooling handles even the most complicated punching in a single pass. Reduces your labor costs, too, because one operator and one helper are all that's required.

Team this punch with the time-saving Beatty Spacing Table for extra production economies. This combination handles steel shapes up to 65 ft. long and plates to 42 in. wide. Spacing of holes and slots is accurate and almost automatic. Exceptionally large die space makes for easy tooling, and the machine may be equipped for either right or left hand operation.

Write For Full Details



BEATTY MACHINE & MFG. CO.
962 150th St., Hammond, Indiana

Report

(Continued from page 10)

Five sections of Ex Parte 174 were extended for a three-year period with provision that one-third of each railroad's locomotives be brought into compliance in each of the three years. These rules will not be fully effective until January 1, 1962 and include Rule 229(f) requiring cab heaters maintain 50 deg F temperature and that cabs have "proper" ventilation; 229(g) requiring "safe" passage between units with open-end platforms; 232 specifying that units have electric classification lights and that there be safe means for access to lights, windows and pantographs; and 225(b) and 323(b) providing for safety cut-outs on fuel tanks with provision that these cut-outs can be reset without hazard.

Wheel Gages Revised

Changes approved for inclusion in the 1959 Interchange Rules include new condemning limits for cast-iron wheels. Rule 73, effective January 1, 1959, provides that the $\frac{3}{16}$ -in. out-of-round dimension shown in Fig. 76-A of the present Wheel and Axle Manual be changed to $\frac{1}{16}$ in. Present gages can be modified by grinding $\frac{1}{16}$ in. from the center projection. The revision also specifies that out-of-round cast-iron wheels must not be reclaimed by grinding. The Mechanical Division suggests action be taken so that all wheels out-of-round and worn-through-chill can be properly condemned on the revised basis.

Personal Mention



J. W. Hawthorne

Atlantic Coast Line. — *Wilmington, N.C.*: JOHN W. HAWTHORNE, general superintendent motive power and equipment, appointed chief mechanical officer.

Education: Purdue University (B.S. in mechanical engineering 1933). *Career:* Air-brake instructor, Chesapeake & Ohio, at Richmond, Va.; assistant superintendent motive power and superintendent motive power, Central of Georgia; assistant chief

(Continued on page 46)

Adequately staffed for service!



NATIONAL has the team to assist you in proper brush selection



KEN MATZ

A railroad had both mechanical and electrical problems causing excessive maintenance on diesel traction motors, says "National" Carbon Technical Serviceman, Ken Matz.

The trouble was attributed to brushes. Ken assisted the railroad in analyzing the problems. After evaluating various brush grades, his recommendation for a change to a "National" brush grade was promptly

adopted by the railroad.

Subsequent inspections by Ken, Floyd Anderson and John Gibb substantiated his recommendation. Once again, this demonstrates the thoroughness with which your "National" Carbon Brush Men handle railroad brush problems. There are twenty-six of these specialists throughout the country ready to serve you. For information call or write: National Carbon Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

"National", "N" and Shield Device, and "Union Carbide" are registered trade-marks of Union Carbide Corporation

NATIONAL CARBON COMPANY • Division of Union Carbide Corporation • 30 East 42nd Street, New York 17, N.Y.

SALES OFFICES: Atlanta, Chicago, Dallas, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco • IN CANADA: Union Carbide Canada Limited, Toronto



Since 1902...
'DEPENDABILITY IN SERVICE'

... a time-proven feature of all



**STEEL CASTINGS for
RAILWAY EQUIPMENT**

BUCKEYE C-8 (CUSHION-RIDE)
FREIGHT CAR TRUCK



BUCKEYE SIX-WHEEL TRUCK

FOR COMPLETE INFORMATION . . . CALL or WRITE
Refer Adv. No. 11876

TYPE "M"
TIGER-LINK COUPLER
AND ATTACHMENTS

TYPE "F" INTERLOCK COUPLER
AND ATTACHMENTS

RIDE CONTROL (A-3)
FREIGHT CAR TRUCK



BUCKEYE EIGHT-WHEEL TRUCK

The
Buckeye Steel Castings Co.



COLUMBUS, O.
NEW YORK, N.Y.
CHICAGO, ILL.
ST. PAUL, MINN.
SAN FRANCISCO, CALIF.

LOCOMOTIVES AND CARS WHAT'S NEW IN EQUIPMENT



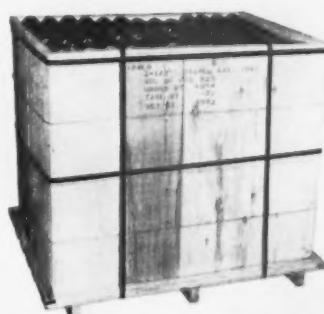
Compartmentizer for Reefers

The first Pacific Fruit Express mechanized refrigerator car equipped with built-in lading protection is now in service. The car is PFE 301212. The lading protection equipment is Pullman-Standard's improved Compartmentizer which will be standard for all future installations. It is available in sizes to fit any standard reefer, or insulated or plain box car. Set of four gates in this PFE car weighs 5,800 lb complete. Overall width of individual gate is 3 ft 10½ in., and height is 7 ft 6¾ in. The material is $\frac{3}{16}$ -in. OH steel.

In general, the new Compartmentizer operates in the same manner as the previous design first put into service in 1951. The gates, each having four individual locks, are permanently installed in the car and move on overhead trolleys from the car ends to the doorway. They can be locked at 3½ in. increments and pivot to the side wall during loading and unloading. The latest modifications are believed to make the device stronger, easier to operate, and less costly to maintain. The locking bar (operating) handles, housings, and gear racks are cast steel. The rack and pinion arrangement between the handles and locking bars gives the operator a 5 to 1 mechanical advantage. This, plus the "straight line" handle operation, is said to greatly facilitate handle movement in locking and unlocking.

To improve lift-truck maneuverability and indirectly reduce maintenance, the gates now pivot to permit one inch more lateral clear area between the face of the gates in their open positions. They also

swing a full 180 deg as compared with 90 deg for the previous design. Greater loading height potential between the gates is accomplished by elimination of the diagonal brace between the pivot post and the trolley member. *Pullman-Standard Car Manufacturing Company, Dept. RLC, 200 S. Michigan ave., Chicago 4.*



Palletized Boxes for Freight Car Springs

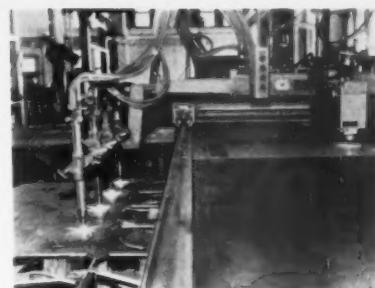
Freight-car springs, shipped in palletized boxes, at no extra cost to the railroads, permits handling of springs in large, easy-to-store units and provides safer and faster unloading of cars. Other advantages

include better utilization of space and quicker tally of inventory. *American Steel Foundries, Prudential Plaza, Chicago 1.*

Rust-Resistant Paint

A one-coat rust-resistant paint, RUSTREM, is said to be suitable for use on freight cars. According to the manufacturer, no prime coating is needed and the paint can be either sprayed or brushed on, with a minimum of wire-brushing, scraping and sandblasting. Because of its penetrating ability, it can be applied effectively over damp surfaces, during light rain, or in locations where moisture is always present.

The paint is available in 1- and 5-gal cans and 55-gal drums in clear and eight standard colors. *Speco, Inc., Dept. RLC, 7308 Associate ave., Cleveland 9.*



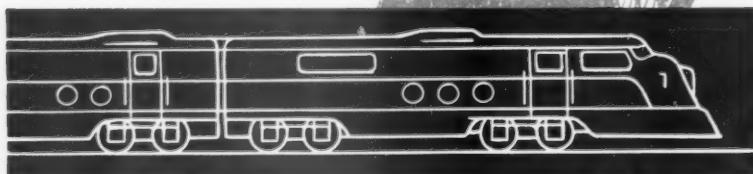
Electronic Tracer

The Linde Photocell tracer eliminates the need for expensive metal or plastic templets, photographic negatives, or complicated silhouettes, and no allowance need be made for kerf width on drawings. It permits the use of easy-to-prepare pencil or ink line drawings to control single- or multi-torch flame-cutting machines. Drawings are made in the exact size of the part desired. The kerf compensator dial is set for the plate thickness being cut and automatically compensates for kerf width.

Intricate metal shapes and small holes that cannot be cut using mechanical type tracing heads can be cut with the electronic tracer. Tracing speed is controlled by an eddy-current governor which provides smooth, setless speed control over a speed range adjustable from 2 to 30 in. per min. At average cutting speeds, the tracer can negotiate 90-deg turns with $\frac{1}{16}$ in. radius. *Linde Company, Division of Union Carbide Corporation, Dept. RLC, 420 Lexington ave., New York 17.*



**THEY
EAT UP THE MILES...
NOT THE
COMMUTATORS!**



There's a Stackpole brush grade for every type of equipment . . . and every kind of operating condition.

STACKPOLE *diesel-electric* **BRUSHES**

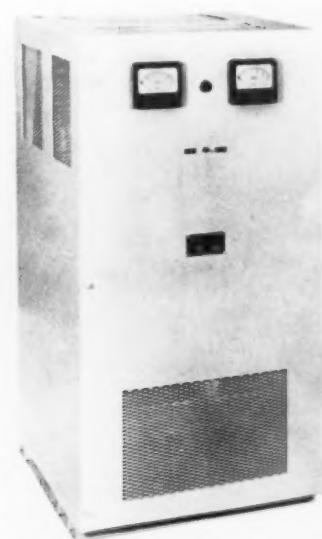


STACKPOLE CARBON COMPANY
St. Marys, Pa.

Solvent Cleaner

Freon-TF, a solvent for cleaning electrical equipment, is said to be extremely inert to insulating materials and varnishes used on motor windings. While the compound may not dissolve highly oxidized carbon deposits, the soil which initially accumulates on motor windings consists of an oil-in-carbon mixture which is removed effectively by Freon solvent, it is claimed.

Cost of cleaning large electric motors may be reduced as much as 75 per cent through on-site use of this nonflammable, non-explosive and virtually nontoxic Freon solvent. No special drying equipment is required with Freon-TF solvent because of its favorable vaporization temperature. *E. I. du Pont de Nemours & Co., Dept. RLC, Wilmington, Del.*



Silicon-Rectifier Battery Chargers

A complete line of new silicon-rectifier battery charges is said to provide the most accurate voltage control available in chargers for stand-by batteries. Using an electrical rectifying system for converting alternating current directly to the direct current required for battery charging, the units are controlled by high-quality magnetic amplifiers with sensing control circuits which automatically maintain the proper charging voltage at the battery terminals.

The chargers are for use with stationary batteries in emergency power, emergency lighting, and in other float-charge battery applications where charge control is essential. They are designed for floor-wall or rack mounting and come in 27 basic models for use with batteries having from 11 to 62 cells. Both single- and three-phase units, having an output range of from 1 to 400 amps, are available. Single-phase units can be operated at 115 or 230 volts; three-phase units, at 230 or 460 volts.

Components conform to latest standards

of the AIEE and the National Electrical Manufacturers Association. *Exide Industrial Division, Electric Storage Battery Company, Philadelphia 20.*

Air-Powered Hydraulic Jack

A newly designed 30-ton capacity air-powered hydraulic jack is mounted on a small two-wheel hand truck. The compact ram unit is placed in cramped and hard-to-reach positions where manually operated jacks or cranes cannot reach, and the entire lifting or straightening operation



can be observed with safety at a distance of 6 ft. The unit weighs 160 lb and can operate at 10,000 psi continuously for extended periods of time. *Duff-Norton Company, Dept. RLC, Pittsburgh, Pa.*

Spray-Powder

A spray powder, developed for use with the Metco ThermoSpray Gun, permits hard facing parts subject to extreme wear with sprayed tungsten carbide at very high deposit efficiency—better than 90 per cent—and extremely high concentration of the carbide. Coating speeds are also high—110 to 150 sq ft per hr, .001 in. thick. Coatings are torch-fused after spraying, and close control of coating thickness minimizes finishing operations. *Metallizing Engineering Company, 1101 Prospect ave., Westbury, Westbury, L. I., N. Y.*

**NOTHING EQUALS
THE
ECCENTRIC
METHOD
OF VALVE SEAT
GRINDING
EXCLUSIVE WITH
HALL**

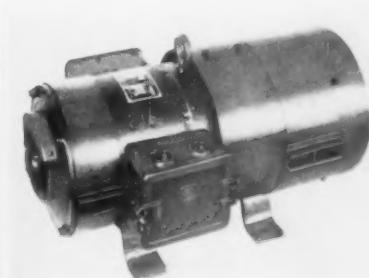
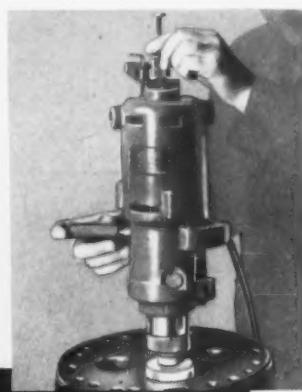
Designed Especially
for Diesel Service!

Only Hall-Toledo's EDP Valve Seat Grinder can absolutely assure the finest performance results by providing perfect valve seating.

Whether you do your own valve work or have a diesel engine service organization handle it, be certain that HALL-TOLEDO equipment is used for faster, factory approved precision valve seat grinding. The MODEL EDP, especially designed for heavy duty diesel engines, will handle grinding wheels from 2" to 7" diameter. The Model EJ HALL-TOLEDO VALVE SEAT GRINDER is also available to precision grind smaller valve seats.

— Write today for information on the complete Hall-Toledo line for factory production or engine rebuilding work.

HALL-TOLEDO, INC., 2931 SOUTH AVE., TOLEDO, OHIO



Motor Alternator

A two-bearing, 3,600 rpm motor alternator, totally enclosed and fan cooled, is suitable for operation in extremely dusty locations. It is designed for a closely regulated 115-volt, 60-cycle single-phase output of 1,500

POSITION OPEN ELECTRIC PASSENGER CAR INSPECTOR

To perform inspectional duties on all stages of construction of electric passenger cars to be built for the City of Philadelphia, assuring that construction methods and materials conform to plans and specifications. Job to start in February, 1959 and to last for about eighteen months. Job site will probably be located in one of these cities: Philadelphia, Pa.; St. Louis, Mo.; Berwick, Pa.; Worcester, Mass. Experience as master mechanic or car shop superintendent and engineering knowledge desirable. Other comparable experience considered. Send resume, character references, and weekly salary requirement to Mr. E. L. Tennyson, Transit Operations Engineer, Room 1330 City Hall Annex, Philadelphia 7, Penna.



FRANK QUINN
Service Manager



ED HUTSON
Service Engineer



VON BURKETT
Service Engineer



Service Engineers Don Young
and William Boekhoff.

Employed by us...

but they work

These men are American Steel Foundries Service Engineers. Although they are on the ASF payroll they spend the major share of their time with ASF's railroad customers.

Their job begins after our products are shipped . . . their responsibility is to see that the railroads get out of ASF products all the good performance that's designed and built in.

ASF Service Engineers, by their training and experience,

You can count on SERVICE.....

AMERICAN
Prudential Plaza,



for you!

are daily making the railroad mechanical man's job easier. It may be by showing him a better way to do his truck work, assisting him in a reclamation program, or merely helping him to keep abreast of the latest developments in the industry.

Trucks, couplers, brake beams and other running gear involve large investments. You have a right to expect conscientious service . . . and you get it from *ASF*!

...when you specify

STEEL FOUNDRIES
Chicago 1, Illinois



Canadian Manufacturer and Licensee: International Equipment Co., Ltd., Montreal 1, Quebec
Other Foreign Sales: American Steel Foundries, International, S. A., Chicago

watts, with d-c input to motor varying over a wide voltage range. No external regulator is required. Both frequency and voltage of output are controlled within very narrow limits, regardless of wide variations in input voltage, load and temperature.

This motor alternator design, adapted from the Safety railway motor alternator, is for applications on apparatus where d-c only is presently available. *Safety Industries, Inc.*, Box 904, New Haven, Conn.

Lubricant Impregnating Unit

A method for treating metal parts with protective oil absorbent coatings is provided by the Duralube processing Unit. The unit is designed for treating parts benefitted by Lubrizing lubricant impregnation, parkerizing or bonderizing.

The unit consists of three tanks, 16 in. by 48 in. deep, fully fiberglass insulated and housed in a single cabinet, equipped with automatically controlled electrical heating apparatus. A rail hoist 5 ft overhead permits easy handling of parts. The coating tank is of stainless steel. Items to be treated are placed in a rack connected to chain hoist, and carried through the prescribed sequence of coating and water immersions. *Durabilt Company, Dept. RLC, 7500 Main Ave., Los Angeles 1, Calif.*, and *Storm-Vulcan, Inc., Dallas, Texas*.

Personal Mention

(Continued from page 38)

of motive power and equipment and, on April 27, 1950, general superintendent motive power and equipment, ACL.

Atchison, Topeka & Santa Fe. — *Chicago*: JOSEPH B. ROLLHEISER, assistant manager of personnel, retired. Duties of Mr. Rollheiser assumed by E. J. DROEGEMUELLER, also assistant manager of personnel. *Cloris, N. M.*: JOHN L. FERTIG appointed master mechanic, Pecos division, succeeding W. C. ELLISON, deceased.

Canadian National. — *Montreal, Que.*: ROY RANDALL appointed general supervisor of mechanical maintenance, Department of Transport. *Moncton, N. B.*: RAYMOND J. HICKEY appointed supervisor of diesel equipment, Atlantic region. Formerly diesel superintendent, Atlantic region. *Edmonton, Alta.*: E. C. PIZZEY appointed master mechanic. *Port Arthur, Ont.*: W. H. OLMSTEAD appointed master mechanic, succeeding Mr. Pizzev. Formerly master mechanic at Melville, Sask. *Allandale, Ont.*: S. A. MCLEOD appointed road foreman of engines. *Capreol, Ont.*: W. H. WOODHOUSE appointed road foreman of engines, succeeding Mr. McLeod. Mr. Woodhouse formerly road foreman of engines, Hornepayne division.

Gulf, Colorado & Santa Fe. — *Temple, Tex.*:

Jurisdiction of J. G. DANNEBERG, master mechanic, Southern division, extended to include Gulf division.

New York, Chicago & St. Louis. — *Brewster, Ohio*: J. O. HILL, master mechanic, Wheeling & Lake Erie district, retired.

Northern Pacific. — *Seattle, Wash.*: W. T. KENNELLY appointed superintendent of motive power, western district, succeeding F. W. TAYLOR, retired. *Livingston, Mont.*: C. J. WIRTH appointed master mechanic, succeeding Mr. Kennelly. *Duluth, Minn.*: A. J. LEWIS appointed master mechanic, succeeding Mr. Wirth. *Jamestown, N. D.*: Position of master mechanic held by Mr. Lewis abolished. L. W. ANDERSON, road foreman of engines, appointed assistant master mechanic. *St. Paul, Minn.*: D. T. CAPISTRANT appointed superintendent of Como shops, succeeding W. E. GLEB, retired. J. D. KROHNE appointed assistant superintendent of Como shops, succeeding Mr. Capistrant. Mr. Krohne formerly assistant to general foreman, car shop, Brainerd, Minn.

Ontario Northland. — *Rouyn, Que.*: R. B. BAILLIE appointed to new position of car foreman.

Pennsylvania. — *Altoona, Pa.*: PHILIP E. GEISE appointed assistant to engineer of tests. *Buffalo, N. Y.*: J. K. SHERWOOD appointed master mechanic, succeeding Mr. Geise. Mr. Sherwood formerly master mechanic at Canton, Ohio.

**America's foremost
engineered lettering tools**

designed to reduce
your present costs
50 to 80%

Used today by 1/3rd of the
Nation's leading Railroads



**Spray it-
STENCILS**
PRESSURE SENSITIVE TYPES



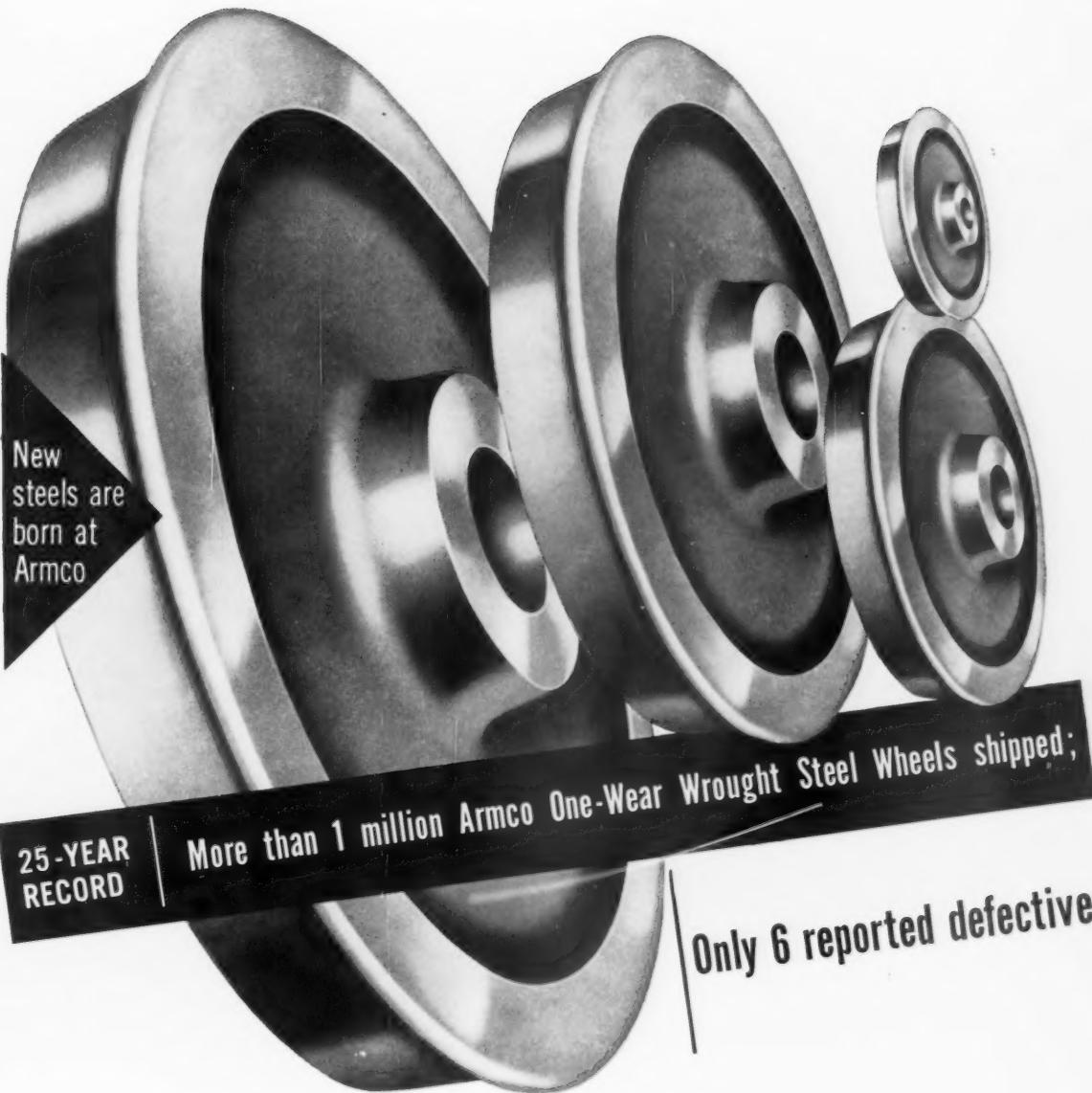
Easy to apply. No skill required. Produces the most accurate and durable type of lettering, numerals, medallion, and other types of markings. Adds long life to your identification or advertising on all your equipment . . .



Whatever your lettering problems may be regarding identification, advertising, reflective or non-reflective, the DEMP-NOCK LETTERING SYSTEMS can help you get the job done in less time.

For additional information write Dept. RR-100
THE DEMP-NOCK COMPANY
31433 MOUND ROAD • VAN DYKE, MICHIGAN • U.S.A.

Albertson & Co. Inc.	29
American Steel Foundries	44, 45
Armeo Steel Corp.	Inside Back Cover
Beatty Machine & Manufacturing Co.	38
Bethlehem Steel Co.	11
Buckeye Steel Castings Company	40
Callaway Mills, Inc.	9
Demp-Nock Co.	46
Farr Co.	21
General Electric	34, 35
General Steel Castings	19
Hall-Toledo, Inc.	43
Journal Box Servicing Corp.	Back Cover
Magnus Metal Corp.	12
Miner, W. H., Inc.	4
National Carbon Co.	39
National Electric Coil Co.	3
National Malleable & Steel Castings Co.	23-26 Incl.
Oakite Products Co.	31
Stackpole Carbon Co.	42
Texas Co.	Inside Front Cover
Timken Roller Bearing Co.	6, 7
Toledo Pipe Threading Machine Co.	37
Wine Railway Appliance Co.	17



New steels are born at Armco

25-YEAR RECORD

More than 1 million Armco One-Wear Wrought Steel Wheels shipped;

Only 6 reported defective

From 1932 through 1957, Armco produced and shipped more than 1,000,000 one-wear wrought steel wheels. Of this number, only six—less than six ten-thousandths of one per cent—were reported as defective.

There's a reason for this record

Dependable service is literally worked into Armco One-

Wear Wrought Steel Wheels by *forging and rolling*. Wear resistance and toughness are imparted to every inch of the wheel in these operations. That's why they can't be beat for miles of trouble-free service.

For complete information about dependable Armco Wrought Steel Wheels just call our nearest sales office or write Armco Steel Corporation, 1069 Curtis Street, Middletown, Ohio.

ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

MEMO FROM THE GENERAL OFFICE

*Jim—Still too
many hot boxes
Suggest using Acme
Lubricators*

The JBS ACME LUBRICATOR is a Positive Advance in Journal Lubrication



- ★ Retains 4 times its own weight in oil
- ★ Requires no modification of journal box
- ★ Wicks AAR specification car oil even in coldest weather
- ★ Assures better performance with less servicing
- ★ Cannot Glaze—Wool-cotton chenille loop surfaces
- ★ Has exclusive patented all-wool quilted core*
- ★ Reinforced for extra wear
- ★ Readily reclaimed

Complimentary reports are coming in from scores of railroads throughout America, Canada and Alaska using JBS Acme Journal Lubricators, a product of the Journal Box Servicing Corporation, that JBS Acme Lubricators are greatly reducing hot boxes in their operations. JBS Acme alone has the exclusive all-wool quilted core* which retains many times its own weight in oil reserve. Heavy chenille loop pile surfaces assure an ample supply of filtered oil at all times and prevent glazing. JBS Acme Lubricators are unaffected by temperature changes and wick AAR specification car oil even at 45° below zero in road service tests. JBS Acme Lubricators require no modification of the standard journal box, are designed to hold their position in the box, and assure better performance with less servicing.

Write Today for Information and Folder

GUARANTEED
Quality, Workmanship and Material
as represented

Copyright 1958—Journal Box Servicing Corp.

*Patent applied for

JOURNAL BOX SERVICING CORP.

"30 Years in Car Lubrication"

SALES OFFICE: 332 S. MICHIGAN AVE., CHICAGO 4, ILLINOIS
GENERAL OFFICES: 1112 E. KESSLER BLVD., INDIANAPOLIS 20, INDIANA
FACTORY: DALTON, GEORGIA

REGIONAL SALES OFFICES:

ST. LOUIS, MISSOURI • CLEVELAND, OHIO

WASHINGTON, D. C. • KANSAS CITY, MISSOURI

SAN FRANCISCO, CALIF. • MONTREAL, QUEBEC

• •